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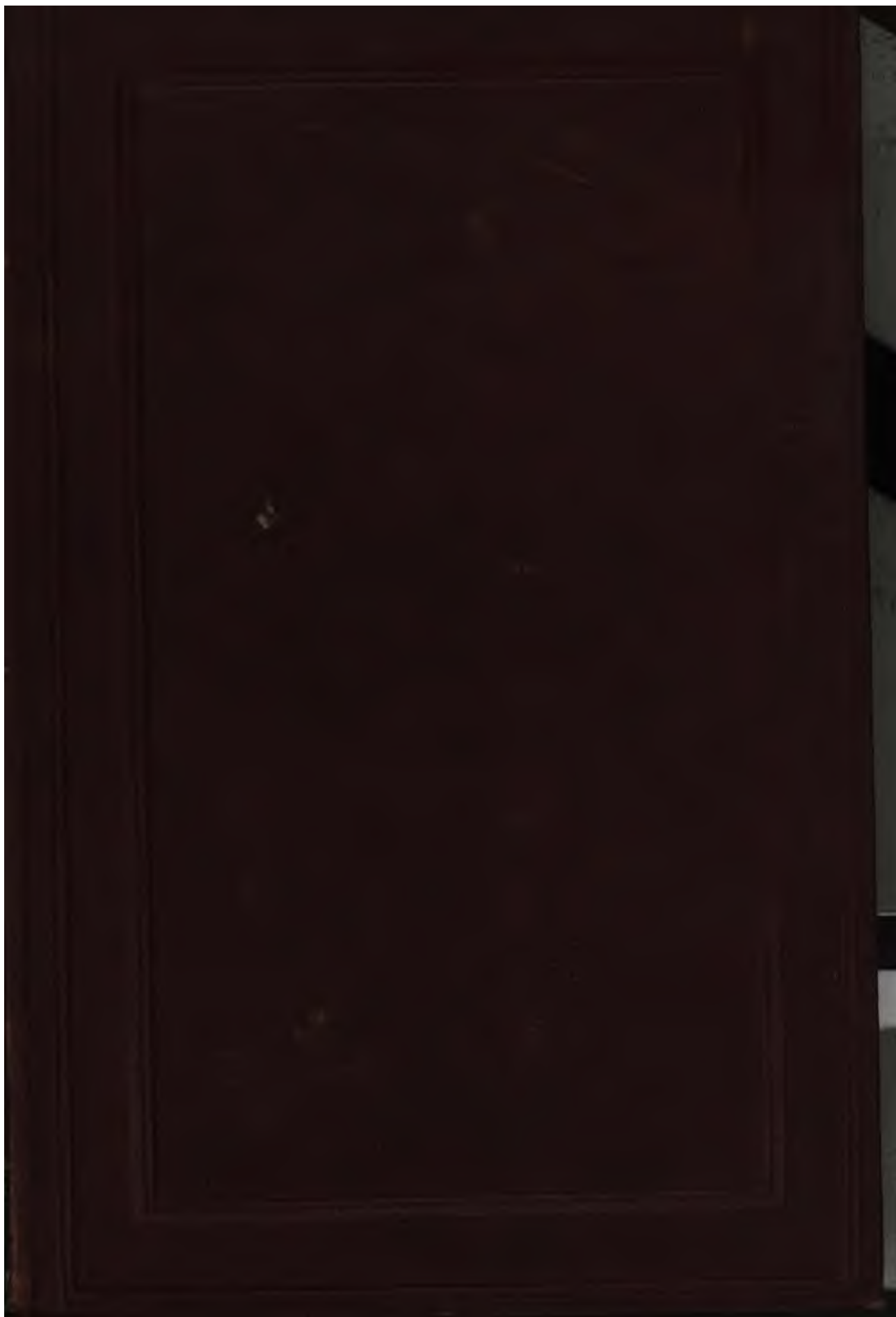
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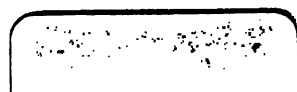
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NAUTICAL TABLES

DESIGNED FOR THE USE OF BRITISH SEAMEN

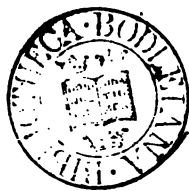
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EXPLANATION AND USE OF TABLES.

Table (a), p. 1.—This table contains the whole correction of the sun's altitude, involving dip, refraction, semidiameter, and parallax. The lower limb is supposed to be observed. When the upper limb is observed proceed as in the Table, and deduct 32'.

Table (b), p. 2. *Parallax in Altitude for Planets*.—Enter with the hor. parallax of a planet (supposed to be known from the Nautical Almanac) at the top, and the app. altitude of planet at the side. Thus will be found the parallax in altitude, to be *added* to the app. alt. to get the true alt. The app. alt. is first supposed to be corrected for refraction, as for a fixed star. See Tab. (n.)

Table (c), p. 2. *Correction of A for Planet in Clearing Distance*.—For explanation of this table, see that of Table (w).

Table (cc), p. 2. *Sun's Parallax in Altitude*.—The effect of parallax in alt. for the sun, is included in correction of Table (m): it is put down here, as it is occasionally of use considered separately. (See Navigation on Occultations, p. 180.)

Table (d), p. 3. *Points of Compass, &c.*—This table is of use in turning the points of the compass into degrees, and conversely: also, in finding at once the log. sines of points and quarter points.

Table (e), p. 3. *Dip of the Sea Horizon*.—The altitude of a heavenly body is taken in the open sea with Hadley's quadrant, in doing which the image is brought down to the apparent sea horizon, which is below the level of the eye. The observed altitude is on this account something too great. The necessary correction is put in Table (e), which is entered with the estimated height of the eye above the sea. The correction or dip taken out is *subtractive*.*

* In computing this table, it is necessary to consider the effect of horizontal refraction in raising the visible sea horizon, which has been found to be about 8-100ths of the dip independently of this correction. But this effect varies with the state of the air near the sea horizon. Hence the correction applied for dip may frequently be erroneous; and this is one cause why altitudes taken at sea, particularly those taken near the horizon, are not to be depended on where great accuracy is required.

Table (f), p. 3. *Dip of a Shore Horizon*.—Sometimes the observer is obliged to bring the image down to the shore of an island or continent, over which the heavenly body happens to be. In this case the dip is greater than in the open sea. The table is entered with the estimated height of the eye and the estimated distance of the shore; the correction taken out is *subtractive*.

Table (g), p. 4. *Augmentation of the Moon's Semidiameter*.—The semidiameter of the moon put down in the Nautical Almanac is computed on the supposition that the spectator is at the centre of the earth; whereas he is on the surface; and therefore, when the moon is above the horizon, he is nearer to the moon than if he were at the centre. Consequently the apparent semidiameter is something greater than what is taken out of the Nautical Almanac. The No. of seconds to be added is taken from Table (g), which is entered with the moon's apparent altitude at the side, and the semidiameter to the nearest 10'' at the top.

Table (h), p. 4. *Reduction of Horizontal Parallax and Latitude of Place for Figure of Earth*.—The *hor. parallax* of the moon in the Nautical Almanac is put down for a place on the earth's equator. At any other place on the earth it will be something less; since, on account of the compression towards the poles, the earth's semidiameter is there less than at the equator. The seconds to be subtracted are found in this table by entering with *hor. par.* at the top, and with *lat.* at the side.

The *latitude* of a place on the earth is the arc between the true zenith and the equator: this is called the latitude on the *spheroid*. It is occasionally necessary to reduce this to the latitude of the same place, on the supposition that the surface of the earth at the same place is exactly *spherical*. The seconds to be subtracted for this purpose are put down in the last column of this table. (See Occultation of Fixed Stars in Navigation.)

Table (i), p. 4. *Reduction of Semidiameter on account of Refraction*.—In correcting a lunar distance it is usual to apply the semidiameter of the moon, as seen from the earth's centre, corrected only for augmentation (Table g); but generally a further correction should be applied for the effect of refraction. The extremities of any diameter of the moon inclined to the horizon, being at different altitudes, are unequally raised by refraction, the lower extremity being the more raised; hence a contraction of the diameter takes place. The necessary correction for the semidiameter, which is always *subtractive*, is found from this table, by entering it with the inclination of the line between the bodies observed, as the moon and a star, and the altitude at the side; the inclination may be estimated by the eye. A similar correction should be applied also to the sun's semidiameter.

Table (k), p. 5. *Correction in finding Moon's Meridian Passage*.—In *west* longitude the moon passes the meridian later, that is, longer after the sun, than at Greenwich; because then her distance from the sun in R. A. (reckoning from W. to E.) is greater than it was at the Greenwich meridian passage. In *east* longitude the meridian passage takes place sooner. The necessary correction of the time of the Greenwich passage is taken from this table, by entering it with the longitude at the top, and at the side the difference between the times of two successive Greenwich passages, one on the given day, the other on the day following, in *west* longitude, but the

difference between the passages on the given day and the day preceding, in east longitude.

Table (l), p. 5. *Correction in finding Time of High Water.*—By the change tide is meant the high water when the moon and sun are in conjunction, or appear from the earth in the same part of the heavens. If the moon and sun always remained in this position, the time of high water would be the same always with the change tide: but as this is not the case, a correction becomes necessary; which is found from this table by entering it with the time of the moon's meridian passage for the place at the side, and the moon's semidiameter (taken by inspection from the Nautical Almanac) at the top.

Table (m), p. 6. *Correction of the Sun's Apparent Altitude.*—The sun's apparent altitude is greater than its true altitude on account of refraction, and less on account of parallax. But since the refraction is greater than the parallax, the necessary correction on the whole, or the difference of refraction and parallax, must be subtractive. To find therefore the true altitude of the sun from its apparent altitude, enter this table with the latter, and take out the corresponding number in the column marked *corr.*, which subtract.

The correction taken from this table, if necessary, should be increased or diminished by the number in Table (z 4), p. 380, Correction of Mean Refraction.

Table (n), p. 8. *Correction of a Star's Apparent Altitude.*—A star has no parallax; hence the only correction is to be applied to its apparent altitude, in order to get the true altitude, is for refraction, which is put down in this table in the column marked *corr.* The table is entered with the star's apparent altitude, and the correction taken out is subtractive.

The refraction put down in this table, and used in the last, is computed from Dr. Young's Table of Refraction (see Nautical Almanac).

Tables (o), p. 10. *Table for finding when the sun is on the prime vertical, and Azimuth Table.*—By these two useful tables, in combination with the Traverse Table, the variation or deviation of the compasses may be found at sea with great facility and sufficient exactness. These operations are rendered the more necessary by the present method of constructing ships of iron.

Table (p), p. 13. *Greenwich Date Logarithm for the Moon.*—By means of this table and the table of proportional logarithms, the proportional part of the moon's declination, right ascension, &c., for any Greenwich date, may be very easily computed as follows. Take from this table the logarithm corresponding to the hours and minutes of the Greenwich date, or if it is greater than 12 hours, with the excess above twelve hours. To this logarithm add the proportional logarithm of the change of the declination, right ascension, &c., in the 12 hours in which the date lies; the sum will be the proportional logarithm of the part required.

If the change of the declination or right ascension be more than 3° , use the proportional logarithm of half the change, and double the proportional part which results. This double will be the part required.

Table (q), p. 14. *Greenwich Date Logarithm for the Sun.*—The proportional part of the sun's declination, right ascension, &c., may be found by

means of this table and the table of proportional logarithms as follows. Take from this table the logarithm corresponding to the hours and minutes of the Greenwich date, to which add the proportional logarithm of the change of the sun's declination, right ascension, &c., in the 24 hours in which the date lies. The sum will be the proportional logarithm of the part required.

Table (qq), p. 16. *Proportional Logarithms for Seconds and Tenths of Seconds*.—This table may be of use in finding the proportional part, where the daily or half daily difference is small, and expressed in seconds and tenths of seconds. See explanation of Tables (p), (q), and (r.)

Table (r), p. 13*. *Proportional Logarithms*.—It is frequently necessary to work proportions by logarithms, whereof one of the terms is 3 hours. To do this by common logarithms would be extremely tedious, since it would be necessary to reduce every term into seconds, then to take their logarithms from the tables, and finally to bring the resulting seconds into hours, minutes, and seconds. To shorten such operations, the logarithms of every number of seconds below 3 hours are subtracted from the logarithm of the seconds in 3 hours. The results are arranged in a table, and called proportional logarithms; the corresponding hours and minutes being placed at the top of the page, and the seconds at the side.

Since degrees, minutes, and seconds, have the same proportion to each other as hours, minutes, and seconds, it is manifest that the same numbers will be proportional logarithms of any number of degrees, minutes, and seconds, less than 3° .

If any term of four proportionals be required, each of which terms is less than 3^{h} or 3° , it may be computed by proportional logarithms in the same manner as by common logarithms. If one of the terms be 3^{h} or 3° , its proportional logarithm need not be considered in the operation, since it is equal to 0. Hence appears the use of proportional logarithms in finding Greenwich time from the distance of the moon from the sun or a fixed star. The variation of the distance in 3^{h} is taken from the Nautical Almanac, and the proportional logarithm of this is subtracted from that of a less variation of distance. The result is the proportional logarithm of the time required for the latter variation.

Table (s), p. 32. *Log Sine to Seconds*.—Since the sines of small arcs change not only very rapidly, but also irregularly, the common method of proportioning for seconds is both troublesome and erroneous. On these accounts it was thought proper to put down the log sines of arcs as far as $50'$ to seconds; the same numbers are the log cosines of arcs from 90° down to $89^{\circ} 10'$ to seconds. If the *log tangent* of a small arc within the limits of the table be wanted, it may easily be found by subtracting the log cosine (Table t) from the log sine (Table s), adding 10 to the index of the log sine

Table (t), p. 37. *Log Sines, &c.*—An angle is put down in this table at the top and left hand side, if less than half a right angle; and at the bottom and right hand side, if greater than half a right angle; the angles included on the whole being from 0 to a right angle. The angle is put down both in $^{\circ}$ and in h. m. s.; the columns of log sines, log cosines, &c., are marked at the top or bottom; the titles at the top must be used, when the angle is less than 45° , or 3^{h} ; and at the bottom when greater than 45° , or 3^{h} .

If an angle be greater than 90° , or 6^h , take it from 180° , or 12^h , and find the log sine, &c., for the remainder.

This table is useful in turning $^\circ \ ' \ ''$ into h. m. s. and conversely. If an angle expressed in $^\circ \ ' \ ''$ be greater than 90° ; allow 6^h for 90° , and look for the excess above 90° . If an angle in time be greater than 6^h , allow 90° for 6^h , and look for the excess above 6^h .

Table (u), p. 217. *Logarithms of Numbers*.—The first two pages of this table contain the logarithms of numbers from one to a thousand; the other pages contain the logarithms of numbers from 1000 to 9999. To find the logarithm of any given number proceed as follows. If the number do not consist of more than four figures, they may all be found in the column of nat. numbers, and opposite them will be found the decimal part of the logarithm. The index of the logarithm is equal to the number of places, which the first left hand significant figure of the natural number is from the place of units; and it will be positive, if the first significant figure be a whole number or integer, and negative, if it be a decimal fraction. Thus the logarithm of 234 is 2.369216, and that of 0.234 is $\bar{1}.369216$. If the number of figures in the given nat. number exceed four, look for the first four figures, and take out the corresponding logarithm; then look for the 5th figure among the last figures, that is, in the unit places of the nat. numbers which lie in the space of the column, wherein the first four figures have been found. Place the opposite figures in the column of prop. parts under the last figures of the logarithm already taken out, the last figures in each under one another. Then look for the second supernumerary figure, if there be one in the given nat. number, and put the corresponding figures in the prop. parts, (carrying them one place to the right) under the last proportional part written down. Again, look for the third supernumerary figure in the given nat. number, if there be one, and put the corresponding part (carrying them still one place farther to the right) under the last prop. parts put down; and thus go on as far as it may be necessary. Lastly, add all the numbers, as they are put down, together; and take the result, to the nearest sixth place, for the logarithm required (see example in next page).

If any of the supernumerary figures be a cipher, pass over this, but take care to carry the next prop. parts put down, two places to the right.

To find from the table the nat. number of a given logarithm, proceed as follows. Look for the decimal part of the given logarithm in the column of logarithms. If this be found exactly, take out the corresponding number from the column of the nat. numbers. Then insert the decimal mark, so that the first significant figure may be as many places from the unit's place, as there are units in the index of the given logarithm, to the left or right of the units, according as the index is positive or negative.

If there is not a sufficient number of places in the nat. number, when the index is positive, ciphers must be added to the right.

When the index is negative, put a cipher in the unit's place, and then other ciphers in continuation in the first decimal places, so that the first significant figure may be as far from the units, as is denoted by the index.

When the decimal part of the given logarithm cannot be found exactly, in that case, find in the column of logarithms a number next below the decimal of the given logarithm; and take the difference between this and the said decimal. Look in the column of prop. parts, in the space from which the next less logarithm has been taken, for the number next below this difference; the last figure, that is, the figure in the unit's place, of the nat.

number opposite, will be the first figure to be added in continuation to the nat. number corresponding to the next less logarithm.

Take the number in the column of prop. parts next below the aforesaid difference, from the difference itself, and add to the remainder a cipher. With this look again in the column of prop. parts for the number next below it, and the last figure in the nat. number opposite will be the second additional figure.

Thus go on as far as may be necessary, taking the last additional figure to the nearest unit.

If the difference, or remainder with the addition of one cipher, be less than any of the numbers in the column of prop. parts, the corresponding additional figure will be a cipher. Then add another cipher to the remainder, and proceed as above *.

Ex. Required the logarithm of 623472 and the nat. number of the logarithm 5.372642.

dec. log. of 6234...	.794767		5.372642
p. p. for 7	49	next less.372544.. 2358
for 2	14		
		diff.	98
decl. reqd. log.794817	in prop. parts	92.. 5
putting the index	5.794817		—
			60
			55.. 3
			—
			Reqd. nat. number to nearest unit. . 235853
			50

Cologarithms are easily obtained from the table of logarithms *at sight*. Set down the difference of every figure in the logarithm (characteristic as well as mantissa) from 9, proceeding from left to right, until the last significant figure, which subtract from 10. Strike out as many tens from characteristic of the result as cologarithms have been used in the operation.

Table (v), p. 248. *Nat. Versines*.—To find the nat. versine of a given arc from this table, look for the degrees and minutes on the left-hand page, the degrees at the top and the minutes at the side; and take out the corresponding number, observing that where only the last five figures are put down, the preceding ones printed at every third must be added. Then putting the finger on the right-hand page at the nearest half degree to the degrees and minutes just looked out, move it down the corresponding column till it is opposite to the seconds of the given arc, as seen in either side column. The number where the finger is placed will be the parts for the seconds, to be added to the number taken from the left-hand page, the last figure under the last figure.

To find the arc for any given nat. versine, look for the next less in the left-hand page, and take it from the given one. At the same time, take out the degrees and minutes corresponding to the next less. Put your finger on the right-hand page at the nearest half degree to the degrees and minutes just taken out, move it down the corresponding column till you come to the difference between the given versine and the next less as just found, or to

* The index for whole numbers is always *one less* than the No. of integers or whole numbers. When the index is not negative, the No. of integral figures or whole numbers in the nat. number is *one more* than the index denotes.

the nearest number thereto. Then the seconds on either side between which the figure is placed, will be the seconds in the required arc, to be written after the degrees and minutes taken out.

If the minutes of an arc be nearly 15', or 45', in that case, where great accuracy is required, the mean of two parts for seconds may be taken, for the next less half degree and the next greater.

The versines of arcs expressed in time as far as 36^m are given in the three first pages of the table. This part of the table will be found useful, particularly in computing the latitude by several altitudes of a heavenly body taken near the meridian by the following rule.

Take the time of each observation by a time-keeper, the error of which on apparent time is known, and thence deduce the distance in time between each observation and noon, that is, each hour angle in time; take out the nat. versines of these hour angles, and dividing their sum by their number, get the mean versine. Add the corrected or true altitudes together, and dividing by their number get the mean true altitude, and thence the mean true zenith distance. For a Greenwich date corresponding to noon at the place, take from the Nautical Almanac the sun's declination; with this and the mean true zenith distance, as if it were the meridian zenith distance, find an approximate latitude. Then add together 5.314425, log cosine approximate latitude, log cosine declination, log cosec. mean true zenith distance, and log. of the mean nat. versine (adding 4 to proper index). The sum, rejecting the *tens* from the index, will be the log. of a number of seconds, which find from the tables, and subtract them from the mean true zenith distance (under the pole add): the result will be the true meridian zenith distance, from which and the declination, deduce the true latitude as usual.

The *nat. sine* of any angle may be taken from this table, by finding the nat. vers. of an angle greater than the given one by 90°, rejecting the first figure 1. If the angle be above 90°, take the nat. sin. of its supplement to 180°, in this manner. To find the nat. cosine of an angle, take the nat. sine of what it wants, or is above 90°, in the same manner.

Table (w), p. 284. *The correction of the Moon's Altitude and the Auxiliary Angle A.*—The effect of refraction on the moon's altitude being subtracted from the effect of parallax, the remainder is called the *correction in altitude*. To find it from this table, look for the half page having the degree of apparent altitude at the corner; put your finger at the top on the minutes of the horizontal parallax, and move it down the middle line between the column marked *corr.* and the column marked A with 60° under it, till you come opposite the minute at the side nearest to the minute of the apparent altitude in the proper half page. Take out the number at that point to the left of the aforesaid middle line, that is, in the column marked *Corr.* To this add the parts for the seconds of the horizontal parallax taken from the column marked *corr.* at the right hand side of the page. The result will be the correction in altitude which is required.

Should the horizontal parallax be between 53' and 54', then take the correction out for 54', and subtract the parts for the seconds which the horizontal parallax is below 54'. Thus suppose the horizontal parallax is 53' 57", and the moon's apparent altitude is 18° 16'; then the correction corresponding to 54' of horizontal parallax and the altitude 18° 16' is 48' 23", and the parts for 3" at the right hand side of the page is 3": consequently the correction required is 48' 20".

This table also contains the auxiliary angle A, which is used in clearing the distance by the method given in p. 129 of Navigation. The minutes and seconds, to be added to the 60° at the top, are taken out of the table at the same time with the correction in altitude, and in a similar manner; being found on the right of the middle line under the minutes of the horizontal parallax, and opposite the minutes of altitude, or the nearest number thereto. Two additions are made to the number so taken out, one taken from the column A opposite to the seconds of the horizontal parallax in the right hand margin, and the other from the small Table at the bottom of the right hand side of the page, for the nearest degree put down there of the sun or star's altitude; from the second or third column, that is, from the column marked \odot or \star , according as the sun or star is observed.

When the moon's distance from a planet is observed, take the second correction of A from the Table (c), p. 2, instead of the column marked \odot or \star .

If the horizontal parallax is below $54'$, the value of A corresponding to $54'$ and the apparent altitude must first be taken out; then the parts for the seconds which the horizontal parallax is below $54'$ must be subtracted; and thirdly, the small correction for the sun or star's altitude must be added.

Table (x), p. 327. *Traverse Table*.—This table is used principally in working a day's work. The distance run is looked for at the top, and the corrected course, either in points or in degrees, at the side; if less than four points, or 45° , at the left hand side; if greater than four points, or 45° , at the right hand side. The *diff. lat.* and *dep.* will be found in the columns so marked, in the former case at the top, in the latter at the bottom.

This table is also frequently used in turning *dep.* into *diff. of long.*, by looking for the *mid. lat.* as a *course*, and the *dep.* as a *diff. lat.*; the *dist.* will then be the *diff. long.*, also conversely; if the *mid. lat.* be looked for as a *course*, and the *diff. long.* in the *dist.* column, the *dep.* will be the corresponding number in the *diff. lat.* column.

Table (y), p. 364. *Meridional Parts*.—At the earth's equator a degree of longitude is equal to a degree of latitude in length; but as we approach the poles the degrees of longitude become less and less, while the degrees of latitude (supposing the earth to be a perfect sphere) remain the same. In a Mercator's chart the degrees, minutes, &c. of longitude are made every where of the same length; hence, to keep up their proper proportion, it is necessary to increase the degrees, minutes, &c. of latitude. A formula is investigated, which gives the value of any latitude properly increased for this purpose; and the miles contained in the latitude so increased are called its *meridional parts*. The meridional parts are taken by inspection from this table for any given latitude, entering with the degrees at the top, and with the minutes at the side. For all the common purposes of navigation it will be sufficient to take out the meridional parts to the nearest unit; that is, to the nearest figure before the decimal mark or dot.

Table (z), p. 373. *Bearing Amplitude and Time Amplitude at the Rising and Setting of the Sun*.—By the bearing amplitude of the sun is meant the arc of the horizon intercepted between the east point and the point where the sun rises, or between the west point and the point where it sets. It is reckoned from the east and west points towards the north or south, according as the declination is north or south.

By the time amplitude is meant the time the sun rises before or after

6 A.M., or sets before or after 6 P.M. When the latitude and declination are both north or both south, the sun rises so much before 6 A.M., and sets so much after 6 P.M. When the latitude and declination are one north and the other south, the sun rises so much after 6 A.M., and sets so much before 6 P.M.

Each of these amplitudes is found by entering the table with the nearest degree to the declination at the top, and the nearest degree to the latitude at the side. This will be sufficient for most of the purposes of the table.

Table (z 1), p. 377. *The Time from Noon, at which the True Bearing of the Sun is E. or W.*—The most advantageous time for taking an altitude of the sun at sea, from which apparent time is to be deduced, is when its true bearing is E. or W., provided its altitude above the horizon is then at least 6 or 7 degrees. This time may be known by inspection from the tables, entering it with the nearest degree to the declination at the top, and the nearest degree to the latitude at the side.

Table (z 2), p. 378. *Equation of Second Differences for 12 hours.*—Since the moon's latitude, declination, right ascension, &c. do not vary uniformly for 12 hours, the result of a single proportion will not give the correct change after noon or midnight up to the Greenwich date. The first proportional part therefore is corrected by means of a table of second differences as follows.

To find the moon's correct latitude for any given Greenwich date, take from the Nautical Almanac two latitudes, which immediately precede the given date, and two which immediately follow it; write these in the order of time, under each other, marking each with its proper name N or S. If the second be greater than the first and they have the same name, put down their difference with the name of either; if the second be less than the first, and they have the same name, put down their difference with a name different from that of either; if the two latitudes have different names, put down their sum with the name of the latter. A similar rule must be followed for the second and third latitude, and for the third and fourth. Afterwards take the difference of these first differences in a similar manner, marking the result as directed. Then, if the two results have the same name, take half their sum and give it the name of either; if they have different names, take half their difference, and give it the name of the greater.

Enter the *Table of Second Differences* with the hours and minutes the Greenwich date is after noon or midnight, at the side; and with the mean second difference at the top, first the minutes and then the seconds (see the Table). The sum of the parts taken out will be the *equation of second differences*, to which put a contrary name to that of the mean second difference. Then compute the first proportional part as usual, putting to it the name of the middle first difference; under this put the equation of second differences, and if the names be like, take the sum with the name of either; if the names be unlike, take the difference with the name of the greater; the result will be the correct proportional part to be applied to the second latitude.

The declination of the moon is taken out in a similar manner.

The right ascension of the moon may also be taken out thus: putting to each right ascension the sign + instead of the name N or S as used above and the sign — when the name is changed as above.

This observation applies also to the longitude of the moon

Ex. Required the moon's latitude at Greenwich on May 18, 4^h 20^m.

	Latitude.			
17	Midn. . . . 4° 59' 49" S			
		First Diff.		
18	Noon . . . 5 0 29 S	0' 40" S		
			Second Diff.	
18	Midn. . . . 4 57 32 S	2 57 N	3' 37" N	
				M. Second Diff.
19	Noon . . . 4 50 46 S	6 46 N	3 49 N	3' 43" S
(p)	.44236		1' 3".8 N	
	1.78545		0 25 .7 S	
	<hr/> 2.22781		<hr/> 0 38 .1 N	
			5 0 29 S	
			<hr/>	
		Lat.	4 59 50 .9 S	

Table (z 3), p. 379. *Mean Motion of the Sun in Right Ascension for Sidereal Hours.*—This table contains the difference between any interval as expressed in sidereal time, and the same interval as expressed in mean solar time. It is particularly useful in turning sidereal time into mean solar time as follows. From sidereal time, increased if necessary by 24 hours, subtract the right ascension of the sun at the preceding apparent noon. The remainder will be the interval between apparent noon and the given instant, as shewn by a sidereal clock. From this subtract the mean increase of the sun's right ascension in that interval so expressed, which increase is taken from this table. The remainder will then be the distance from apparent noon as shewn by a mean solar clock. To this apply the equation of time at the preceding noon with its proper sign as in the Nautical Almanac, and the result will be the distance of the given instant from mean noon, as shewn by a mean solar clock, or it will be mean time.

Table (z 4), p. 379. *Correction of Mean Refraction.*—The amount of refraction depends on the weight and temperature of the air. The barometer at the surface of the sea is supposed to stand at 30 inches and the thermometer at 50°, when the air is at its mean state in both respects. On this supposition the tables of correction for refraction and parallax, pp. 6, 7, 8, 9, and p. 284 to 326, are formed. If the barometer and thermometer do not stand so, the corrections taken from those tables must be increased or diminished by the numbers taken from Table (z 4). When the quicksilver in the barometer is higher than 30 inches, or that in the thermometer is higher than 50°, the number of seconds taken from Table (z 4) must be applied with the signs at the head of the columns, for the sun or a star; when the quicksilver stands below these heights in either, they must be applied with the signs at the bottom, for the sun or a star. But to the correction of the moon's altitude, as put down in Table (w), these numbers must be applied with contrary signs to those found in this manner.

Table (o) 1, p. 12. An imaginary sun moving in right ascension with the mean motion of the true sun, or $3' 56''.556$ in 24 mean solar hours, is called the *mean sun*. When such a supposed sun is on the meridian of any place, its right ascension is the same there as *sidereal time* (see Navigation); under which heading it is put down in the Nautical Almanac for every mean noon at Greenwich.

For any other Greenwich date the numbers taken from this Table—first, for the hours; secondly, for the minutes; and, thirdly, for the seconds—are added to the right ascension (or sidereal time) at the preceding noon. The result is the right ascension of the mean sun for the Greenwich date.

Table (o) 2, p. 12. A diameter of the earth being supposed to be produced outside the earth's surface to any height as h , and a tangent as t to be drawn from the extremity of h to the surface of the sea: then, from the properties of the circle, $t^2 = h \times (\text{diameter} + h)$: or, taking the diameter 41796480

feet, $\log. t = \frac{1}{2} \left\{ \log. h + \log. (41796480 + h) \right\}$. From this formula t is com-

puted for different heights h , and put down in this Table. It is evidently the distance at which a high object, as the top of a mountain whose height is h , might be seen by an eye supposed to be placed on the surface of the sea. If t be supposed to be produced beyond the point where it touches the sea, so as to reach any elevated spot where the eye may actually be placed, as the mast-head of a ship, whose height is h' , the distance it is thus produced, as t' , may evidently be found from the Table by entering it with h' ; and then, adding t' to t , the sum will be the whole distance of the eye from the object whose height is h .

Table (o) 3, p. 12. If δ (computed as in p. xi.) denote the 2nd difference of any quantities put down for every 1^h or 3^h , as the moon's R. A. in the Nautical Almanac or the lunar distances, then the *equation of 2nd diff.* is $\delta \cdot x \cdot \frac{x-1}{2}$, x being the fractional part of 1^h or 3^h , which the Greenwich date is beyond the preceding 1^h or 3^h . In Table (o) 3 the value of $x \cdot \frac{x-1}{2}$

is put down, so that, if δ in seconds be multiplied by the number found from this Table, the result will be the *equation of 2nd diff.*, by which an element to be computed for any Greenwich date may be corrected, in the manner directed in p. xi., where the interval is 12^h .

When the Greenwich date is required to be found from the given element, this is first computed, as usual, on the supposition of uniform motion for 1^h or 3^h ; the *equation of 2nd diff.* is then computed in the manner pointed out in p. xi. Then subtracting from the *prop. log.* of this equation the *prop. log.* of the excess of the Greenwich date first got above the preceding 1^h or 3^h , the result will be the *prop. log.* of the required correction on account of variable motion. This correction being found, it must be added when the change of the element is accelerated, that is, when the differences of the element in question for 1^h or 3^h increase; otherwise it must be subtracted.

But this correction is most easily taken from a Table in the Nautical Almanac, p. 484.

Table (o) 4, p. 12. If x be the true lunar distance, d the apparent dis-

tance, A and A' the true altitudes, and a and a' the apparent altitudes; then
vers. $x = \text{vers. } (A - A') + \text{vers. } \theta$, where $\log. \text{havers } \theta = \frac{1}{2} \log. \text{havers}$
 $(d + \overline{a - a'}) + \frac{1}{2} \log. \text{havers } (d - \overline{a - a'}) + \{ \log. \sec. a + \log. \cos. A - 20 \} +$
 $\{ \log. \sec. a' + \log. \cos. A' - 20 \}$. Table (o) 4 contains each expression
 between the brackets, supposing the body, as a fixed star, to be affected only
 by refraction (see Navigation, Lunar Observations, when spheroidal figure of
 earth is considered). And the column for the sun contains the expression
 for the sun as affected both by parallax and refraction.

Table of Logistic Logarithms (o) 5. If there be a proportion consist-
 ing of four terms, two of which are expressed in time and two in degrees, or
 all are expressed in time or in degrees, one of the terms being 1^h or 1° , and
 none of them being greater than 1^h or 1° ; then, any one unknown and
 required term may be easily found by means of this Table. Thus, let 1^h
 $: a :: b : c$ be the proportion; then the Table contains what the log. of
 seconds in each term wants of the log. of 3600, the number of seconds in 1^h
 or 1° , and this is called the *logistic logarithm*. (*loge. log.*) of that term. The
 $\log. \log.$ of 1^h or 1° is therefore 0, and in the proportion just stated, any one of
 the three terms, a , b , c , may be found by adding or subtracting the *log. log.*
 of the two others supposed known: if the required term be an extreme term,
 as c , by adding: if a mean or middle term, as b or a , by subtracting. The
 result will be the *log. log.* of the required term, which may be taken, there-
 fore, from the Table.

Table of Prop. Parts, p. 216. A principal use of this Table is to take
 out $\log. \sin.$, $\log. \cos.$, &c., for seconds of arc. To do this; take out of the
 Table of $\log. \sin.$, $\log. \cos.$, &c., the difference for $15''$ of arc. Look for this
diff. in the left marginal column of this Table of Prop. Parts, under 15; then
 the *diff.* for any odd seconds above the next less $15''$, for which the $\log. \sin.$,
 $\log. \cos.$, &c., is given, will be found in the same horizontal line, and under
 the said odd seconds in the extreme heading in a line with 15. In using
 this Table it must be particularly noticed that some of the last figures, under
 the heading 15, may be considered as decimal fractions, in which case, the
 same number of decimal fractions must be supposed in the number taken out.
 Let the $\log. \sin.$ of $12^\circ 33' 23''$ be required. The $\log. \sin.$ of $12^\circ 33' 15''$ is
 9.337185: the *diff.* for $15''$ is 141, the nearest to which under 15 is 140,
 the last 0 in 1400 being considered a decimal fraction. The corresponding
 number under 8 (which $23''$ is above $15''$) is 74.7, where the last figure is
 supposed a decimal fraction. Adding, therefore, 74.7 or 75 to 9.337185,
 we have the required $\log. \sin.$, namely, 9.337260. . . . The mode of finding
 an arc to the nearest second, by means of this Table, will be apparent from
 the following example. Let the arc be required corresponding to $\log. \sin.$
 9.337260. The next in the Table of $\log. \sin.$ is 9.337185, which is less
 than the given $\log. \sin.$ by 75. Looking for the nearest to 75 in the same
 horizontal line with the *diff.* for $15''$ or 141, considering in both cases the
 last figure as a decimal fraction, we find 8 at the top. Consequently, the re-
 quired arc is $12^\circ 33' 15'' + 8''$, or $12^\circ 33' 23''$.

This Table may be used also in a similar manner, when the prop. part
 is given for 1^h or 60^m ; or for 12^h ($*12^h$), as in the case of the moon's hor
 parallax and semidiameter.

Tables (Aa Bb) of Logarithmic Differences, p. 382-4.

The altitude and horizontal parallax of the moon and the alt. of the sun or a star given, to find the log. difference.

Take out the log. diff. corresponding to moon's app. alt. either in the left or right side column and under the hor. parallax at the top, and write down in a corner of the paper or elsewhere, the diff. of 1° of \odot 's alt., and the diff. of $1'$ of parallax,* then turn to table (Bb), and take out the proportionate parts for the minutes of alt., and for the seconds of parallax, and also the sun's or a star's correction from the bottom of table (Aa); and add the sum of these three quantities to the log. difference taken out, and you have the log. difference required.

Note.—Should the moon's alt. be to the degree, add the diff. of 1° of alt. to the log. difference; and when the hor. par. is only to the minute, add in the same manner the diff. of $1'$ of parallax.

Ex. 1. \odot app. alt. $16^\circ 10'$, hor. par. $57' 28''$, and \odot alt 68° : find the log. difference.

Log. Diff.	6.299046	diff. 1° alt.	diff. $1'$ par.
p. p. for $10'$ of \odot alt.	102½	128	39
p. p. for $28''$ of par.*	20½		
\odot 's correction	18		

Log. Difference required 6.299182

Ex. 2. \odot alt. $32^\circ 0'$, hor. par. $55' 25''$, a star's alt. 12° : find the log. difference.

Log. Diff.	6.297336	104	71
diff 1° alt.	104		
p. p. for $25''$ of par.*	89		
star's correction	27		

Log. Difference required 6.297506

Ex. 3. \odot alt. $25^\circ 42'$, hor. par. $56' 0''$, \star 's alt. 40° : find the log. difference.

Log. Diff.	6.298031	114	58
p. p. for $42'$ of \odot alt.	84		
diff. $1'$ par.	58		
\star correction	30		

Log. Difference required 6.298153

Rule for clearing Lunar Distance.

- (1) Under the difference of apparent altitudes (both to the nearest minute), write the apparent distance, omitting the seconds, to be added afterwards; and take their sum and difference.
- (2) Add together the half log. haversines of the sum and difference, and the logarithmic difference (see the preceding problem), and the sum is the logarithm of a number.
- (3) To the number, add the nat. versine of the difference of true altitudes, and the sum is the nat. versine of an arc, which, on being increased by the "seconds" omitted, becomes the true distance.

* The "diff. $1'$ par. *" is found in the last column but one, to the right.

Note.—The difference of true altitudes may be found thus:—add together the moon's app. alt. (to the nearest minute) and the corrections of alts. of both objects, and the difference between the sum and the sun's or star's app. alt. is the difference of true altitudes.

Tables Cc, Dd, p. 385.—These tables are for the correction of the log. difference in the case of a planet, and for exceptional conditions of the thermometer and barometer. They are easily understood by inspection.

Example of Lunar worked by means of the Log. Difference.

☾ app. alt.	. . .	32° 49' . .	Hor. par.	. . .	54' 20"
☉ " "	. . .	37 23			
		<hr/>			
Diff.	. . .	4 34			
App. dist.	. . .	106 28 27"			
		<hr/>			
Sum	. . .	111 2 . .	$\frac{1}{2}$ log. hav.		4.916081
Diff.	. . .	101 54 . .	$\frac{1}{2}$ log. hav.		4.890195
			Log. difference		6.297407
☾ diff. 1° = 103,	par. diff. 1' = 71	. . .			84*
					<hr/>
pp. for 49' = 19			Log.	. . .	6.103767
20" = 47					<hr/>
☉ corr. = 18					
			No.	. . .	1269890
Diff. true alts.	. . .	3° 48' 47"	Vers.	. . .	2198
					16
					<hr/>
		105° 47' 22"	Vers.	. . .	1272104
Seconds omitted		27			
		<hr/>			
True dist.	. . .	105 47 49			
		<hr/>			

NOTE.—It may be often convenient to use the apparent distance to the nearest *even* minute, observing to subtract the *seconds* at the conclusion, if taken in *excess*.

For instance—let the app. distance 60° 53' 50" be given; the seaman would use 60° 54', and at the conclusion of his work *subtract* 10", the *excess*, from the computed distance, to get the true distance.

Table (a). Correction of ☉'s Altitude (involving Dip, Refraction, Semidiameter, and Parallax).

Obs. Alt.		Add the Correction to the Altitude of the Lower Limb.																
		Height of the Eye in Feet.																
		6	8	10	12	13	14	15	16	17	18	20	22	24	26	28	30	32
5	0	3.8	3.4	3.1	2.8	2.6	2.5	2.3	2.2	2.1	2.0	1.8	1.6	1.4	1.2	1.0	0.8	0.6
10		4.0	3.7	3.3	3.1	2.9	2.8	2.6	2.5	2.4	2.3	2.1	1.8	1.6	1.5	1.3	1.1	0.9
20		4.3	3.9	3.6	3.3	3.2	3.0	2.9	2.8	2.7	2.5	2.3	2.1	1.9	1.7	1.5	1.3	1.1
30		4.5	4.2	3.9	3.6	3.4	3.3	3.1	3.0	2.9	2.8	2.6	2.4	2.2	2.0	1.8	1.6	1.4
40		4.8	4.4	4.1	3.8	3.7	3.5	3.4	3.3	3.2	3.0	2.9	2.6	2.4	2.2	2.0	1.8	1.7
50		5.0	4.6	4.3	4.0	3.9	3.7	3.6	3.5	3.4	3.3	3.0	2.8	2.6	2.4	2.2	2.0	1.9
6	0	5.2	4.9	4.5	4.2	4.1	4.0	3.8	3.7	3.6	3.5	3.3	3.0	2.8	2.6	2.4	2.3	2.1
10		5.4	5.1	4.7	4.4	4.3	4.2	4.0	3.9	3.8	3.7	3.5	3.2	3.0	2.8	2.7	2.5	2.3
20		5.6	5.2	4.9	4.6	4.5	4.3	4.2	4.1	4.0	3.9	3.7	3.5	3.2	3.0	2.8	2.7	2.5
30		5.8	5.4	5.1	4.8	4.7	4.5	4.4	4.3	4.2	4.0	3.8	3.6	3.4	3.2	3.0	2.9	2.7
40		5.9	5.6	5.3	5.0	4.9	4.7	4.6	4.5	4.3	4.2	4.0	3.9	3.6	3.4	3.2	3.0	2.9
50		6.1	5.8	5.5	5.2	5.0	4.9	4.8	4.6	4.5	4.4	4.2	4.0	3.8	3.6	3.4	3.2	3.0
7	0	6.3	5.9	5.6	5.3	5.2	5.1	4.9	4.8	4.7	4.6	4.3	4.2	3.9	3.7	3.6	3.4	3.2
20		6.6	6.2	5.9	5.6	5.4	5.3	5.2	5.1	4.9	4.8	4.6	4.4	4.2	4.0	3.8	3.6	3.5
40		6.9	6.5	6.2	5.9	5.7	5.6	5.5	5.3	5.2	5.1	4.9	4.7	4.4	4.2	4.1	3.9	3.8
8	0	7.1	6.8	6.4	6.1	6.0	5.9	5.7	5.6	5.5	5.4	5.1	4.9	4.7	4.5	4.3	4.1	4.0
20		7.4	7.0	6.7	6.4	6.2	6.1	6.0	5.8	5.7	5.6	5.4	5.1	4.9	4.7	4.6	4.4	4.3
40		7.6	7.2	6.9	6.6	6.5	6.3	6.2	6.1	5.9	5.8	5.6	5.4	5.2	5.0	4.8	4.6	4.5
9	0	7.8	7.4	7.1	6.8	6.7	6.5	6.4	6.3	6.2	6.0	5.8	5.6	5.4	5.2	5.0	4.8	4.7
20		8.0	7.6	7.3	7.0	6.9	6.7	6.6	6.5	6.4	6.2	6.0	5.8	5.6	5.4	5.2	5.0	4.9
40		8.2	7.8	7.5	7.2	7.1	6.9	6.8	6.7	6.6	6.4	6.2	6.0	5.8	5.6	5.4	5.2	5.1
10	0	8.4	8.0	7.7	7.4	7.2	7.1	7.0	6.9	6.7	6.6	6.4	6.2	6.0	5.8	5.6	5.4	5.3
30		8.6	8.3	7.9	7.6	7.5	7.3	7.2	7.1	7.0	6.9	6.6	6.4	6.2	6.0	5.8	5.6	5.5
11	0	8.9	8.5	8.2	7.9	7.7	7.6	7.5	7.3	7.2	7.1	6.8	6.6	6.4	6.2	6.1	5.9	5.7
11	30	9.1	8.7	8.4	8.1	7.9	7.8	7.7	7.5	7.4	7.3	7.1	6.8	6.6	6.4	6.3	6.1	5.9
12	7	9.3	8.9	8.6	8.2	8.1	8.0	7.9	7.7	7.6	7.5	7.3	7.0	6.8	6.6	6.5	6.3	6.2
13		9.6	9.2	8.9	8.6	8.5	8.3	8.2	8.1	7.9	7.8	7.6	7.4	7.2	7.0	6.8	6.6	6.5
14		9.9	9.5	9.2	8.9	8.8	8.6	8.5	8.4	8.2	8.1	7.9	7.7	7.5	7.3	7.1	6.9	6.8
15		10.2	9.8	9.5	9.2	9.0	8.9	8.8	8.6	8.5	8.4	8.2	7.9	7.7	7.5	7.4	7.2	7.0
16		10.4	10.0	9.7	9.4	9.2	9.1	9.0	8.9	8.7	8.6	8.4	8.2	8.0	7.8	7.6	7.4	7.2
17		10.6	10.2	9.9	9.6	9.4	9.3	9.2	9.1	8.9	8.8	8.6	8.4	8.2	8.0	7.8	7.6	7.4
18		10.8	10.4	10.1	9.8	9.6	9.5	9.4	9.2	9.1	9.0	8.8	8.6	8.4	8.2	8.0	7.8	7.6
19		10.9	10.6	10.2	9.9	9.8	9.7	9.5	9.4	9.3	9.2	8.9	8.7	8.5	8.3	8.1	8.0	7.8
20		11.1	10.7	10.4	10.1	9.9	9.8	9.7	9.6	9.4	9.3	9.1	8.9	8.7	8.5	8.3	8.1	7.9
22		11.3	11.0	10.6	10.3	10.2	10.1	9.9	9.8	9.7	9.6	9.4	9.1	8.9	8.7	8.5	8.4	8.2
24		11.6	11.2	10.9	10.6	10.4	10.3	10.2	10.0	9.9	9.8	9.6	9.4	9.1	9.0	8.8	8.6	8.4
26		11.7	11.4	11.0	10.7	10.6	10.5	10.3	10.2	10.1	10.0	9.8	9.5	9.3	9.1	8.9	8.8	8.6
28		11.9	11.5	11.2	10.9	10.8	10.6	10.5	10.4	10.3	10.2	9.9	9.7	9.5	9.3	9.1	8.9	8.7
30		12.0	11.7	11.3	11.0	10.9	10.8	10.6	10.5	10.4	10.3	10.1	9.8	9.6	9.4	9.3	9.1	8.9
34		12.3	11.9	11.6	11.3	11.1	11.0	10.9	10.7	10.6	10.5	10.3	10.1	9.9	9.7	9.5	9.3	9.1
38		12.5	12.1	11.8	11.5	11.3	11.2	11.1	10.9	10.8	10.7	10.5	10.3	10.1	9.9	9.7	9.5	9.3
42		12.6	12.3	11.9	11.6	11.5	11.4	11.2	11.1	11.0	10.9	10.6	10.4	10.2	10.0	9.8	9.7	9.4
46		12.8	12.4	12.1	11.8	11.6	11.5	11.4	11.2	11.1	11.0	10.8	10.6	10.4	10.2	10.0	9.8	9.6
50		12.9	12.5	12.2	11.9	11.7	11.6	11.5	11.4	11.2	11.1	10.9	10.7	10.5	10.3	10.1	9.9	9.7
55		13.0	12.6	12.3	12.0	11.9	11.7	11.6	11.5	11.4	11.2	11.0	10.8	10.6	10.4	10.2	10.0	9.8
60		13.1	12.7	12.4	12.1	12.0	11.8	11.7	11.6	11.5	11.3	11.1	10.9	10.7	10.5	10.3	10.1	9.9
70		13.3	12.9	12.6	12.3	12.2	12.0	11.9	11.8	11.7	11.5	11.3	11.1	10.9	10.7	10.5	10.3	10.1
80		13.4	13.1	12.8	12.5	12.3	12.2	12.1	11.9	11.8	11.7	11.5	11.3	11.0	10.9	10.7	10.5	10.3
90		13.5	13.2	12.9	12.6	12.5	12.3	12.2	12.1	12.0	11.8	11.6	11.4	11.2	11.0	10.8	10.6	10.4
Month.		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.					
1st day . .		+0.3	+0.2	+0.2	-0.0	-0.1	-0.2	-0.2	-0.2	-0.1	+0.0	+0.1	+0.2					
16th day . .		+0.3	+0.2	+0.1	-0.1	-0.2	-0.2	-0.2	-0.2	-0.1	+0.1	+0.2	+0.3					

* When the upper limb of the Sun has been observed, proceed as above, and deduct 32'.

(b)

Parallax in Altitude for Planets.

App. Alt.	Horizontal Parallax.															
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32
	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0
3	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0
6	2.0	3.9	5.9	7.9	9.9	11.9	13.9	15.9	17.9	19.9	21.9	23.9	25.9	27.9	29.8	31.8
9	2.0	3.9	5.9	7.9	9.9	11.9	13.8	15.8	17.8	19.8	21.7	23.7	25.7	27.6	29.6	31.6
12	1.9	3.9	5.9	7.8	9.8	11.7	13.7	15.6	17.6	19.6	21.5	23.5	25.4	27.4	29.3	31.3
15	1.9	3.8	5.8	7.7	9.6	11.6	13.5	15.5	17.3	19.3	21.3	23.2	25.1	27.1	29.0	30.9
18	1.9	3.8	5.7	7.6	9.5	11.4	13.3	15.2	17.1	19.0	20.9	22.8	24.7	26.6	28.5	30.4
21	1.9	3.7	5.6	7.5	9.4	11.2	13.0	14.9	16.8	18.7	20.5	22.4	24.2	26.1	28.0	29.9
24	1.8	3.6	5.5	7.3	9.1	11.0	12.8	14.6	16.4	18.2	20.0	21.9	23.7	25.5	27.4	29.2
27	1.8	3.6	5.3	7.1	8.9	10.7	12.5	14.2	16.0	17.8	19.6	21.4	23.1	24.9	26.7	28.5
30	1.7	3.4	5.1	6.9	8.7	10.4	12.1	13.8	15.6	17.3	19.0	20.8	22.5	24.2	26.0	27.7
33	1.7	3.3	5.0	6.7	8.4	10.0	11.7	13.4	15.0	16.8	18.4	20.1	21.8	23.5	25.1	26.8
36	1.6	3.2	4.8	6.4	8.0	9.7	11.3	12.9	14.6	16.2	17.8	19.4	21.0	22.6	24.2	25.9
39	1.5	3.1	4.6	6.2	7.8	9.3	10.8	12.4	14.0	15.5	17.0	18.6	20.2	21.7	23.3	24.9
42	1.5	3.0	4.5	5.9	7.4	8.9	10.4	11.9	13.4	14.9	16.3	17.8	19.3	20.8	22.3	23.8
45	1.4	2.8	4.2	5.6	7.1	8.5	9.9	11.3	12.7	14.1	15.6	16.9	18.4	19.8	21.2	22.6
48	1.3	2.7	4.0	5.3	6.7	8.0	9.3	10.7	12.0	13.4	14.7	16.1	17.4	18.7	20.1	21.4
51	1.2	2.5	3.8	5.0	6.3	7.6	8.8	10.1	11.3	12.6	13.8	15.1	16.4	17.6	18.9	20.1
54	1.1	2.3	3.5	4.7	5.9	7.1	8.2	9.4	10.5	11.7	12.9	14.1	15.3	16.4	17.6	18.8
57	1.1	2.1	3.3	4.3	5.4	6.5	7.6	8.7	9.8	10.9	12.0	13.1	14.1	15.2	16.3	17.4
60	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0
65	0.8	1.7	2.5	3.4	4.2	5.1	5.9	6.7	7.6	8.4	9.3	10.1	11.0	11.8	12.7	13.5
70	0.7	1.4	2.1	2.7	3.4	4.1	4.8	5.5	6.1	6.8	7.5	8.2	8.9	9.6	10.3	10.9
75	0.5	1.0	1.5	2.1	2.6	3.1	3.6	4.1	4.6	5.1	5.7	6.2	6.7	7.2	7.8	8.3
80	0.3	0.7	1.0	1.4	1.7	2.1	2.4	2.8	3.1	3.5	3.8	4.2	4.5	4.8	5.2	5.5
85	0.2	0.3	0.5	0.7	0.8	1.0	1.2	1.4	1.6	1.7	1.9	2.1	2.3	2.4	2.6	2.8
90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(c)

Correction of A. for Planet in clearing Distance.

App. Alt.	Parallax in Altitude.									
	0	2	4	8	12	16	20	24	28	32
	+	+	+	+	+	+	+	+	+	+
3	8".0	8".0	8".1	8".2	8".3	8".4	8".6	8".7	8".8	8".9
4	5.4	5.5	5.6	5.7	5.9	6.0	6.2	6.3	6.5	6.7
5	3.8	3.9	4.0	4.1	4.3	4.5	4.7	4.9	5.1	5.3
6	2.8	2.9	3.0	3.2	3.5	3.7	3.9	4.2	4.4	4.7
7	2.1	2.2	2.4	2.6	2.9	3.2	3.5	3.7	4.0	4.3
8	1.7	1.8	2.0	2.3	2.6	2.9	3.3	3.6	3.9	4.2
9	1.3	1.5	1.7	2.0	2.4	2.8	3.1	3.5	3.8	4.2
10	1.1	1.3	1.5	1.9	2.3	2.7	3.1	3.5	3.9	4.3
20	0.0	0.5	0.9	1.8	2.7	3.5	4.3	5.1	6.0	6.8
30	0.0	0.8	1.5	2.8	4.1	5.5	6.8	8.1	9.4	10.7
40	0.0	0.1	2.0	3.9	5.9	7.7	9.7	11.6	13.5	
50	0.0	1.1	2.5	5.2	8.0	10.7	13.4	16.1		
60	0.0	1.5	3.5	7.4	11.4	15.3	19.3			
70	0.0	3.0	6.5	12.8	19.0					
75	0.0	4.4	8.6	17.2						
80	0.0	6.6	13.1	26.0						
85	0.0	13.4	26.0							
88	0.0	33.2	65.8							

Name of Point.		Points	In Degrees		Log. Sine.	Name of Point.		(d)
NORTH.						SOUTH.		
N. $\frac{1}{2}$ E.	N. $\frac{1}{2}$ W.	$\frac{1}{2}$	2	48	45	8.690796	S. $\frac{1}{2}$ E.	S. $\frac{1}{2}$ W.
N. $\frac{1}{4}$ E.	N. $\frac{1}{4}$ W.	$\frac{1}{4}$	5	37	30	8.991302	S. $\frac{1}{4}$ E.	S. $\frac{1}{4}$ W.
N. $\frac{1}{8}$ E.	N. $\frac{1}{8}$ W.	$\frac{1}{8}$	8	26	15	9.166520	S. $\frac{1}{8}$ E.	S. $\frac{1}{8}$ W.
N. by E.	N. by W.	1	11	15	0	9.290236	S. by E.	S. by W.
N. by E. $\frac{1}{4}$ E.	N. by W. $\frac{1}{4}$ W.	$\frac{1}{4}$	14	3	45	9.385571	S. by E. $\frac{1}{4}$ E.	S. by W. $\frac{1}{4}$ W.
N. by E. $\frac{1}{2}$ E.	N. by W. $\frac{1}{2}$ W.	$\frac{1}{2}$	16	52	30	9.462624	S. by E. $\frac{1}{2}$ E.	S. by W. $\frac{1}{2}$ W.
N. by E. $\frac{3}{4}$ E.	N. by W. $\frac{3}{4}$ W.	$\frac{3}{4}$	19	41	15	9.527488	S. by E. $\frac{3}{4}$ E.	S. by W. $\frac{3}{4}$ W.
N.N.E.	N.N.W.	2	22	30	0	9.582840	S.S.E.	S.S.W.
N.N.E. $\frac{1}{4}$ E.	N.N.W. $\frac{1}{4}$ W.	$\frac{1}{4}$	25	18	45	9.630992	S.S.E. $\frac{1}{4}$ E.	S.S.W. $\frac{1}{4}$ W.
N.N.E. $\frac{1}{2}$ E.	N.N.W. $\frac{1}{2}$ W.	$\frac{1}{2}$	28	7	30	9.673387	S.S.E. $\frac{1}{2}$ E.	S.S.W. $\frac{1}{2}$ W.
N.N.E. $\frac{3}{4}$ E.	N.N.W. $\frac{3}{4}$ W.	$\frac{3}{4}$	30	56	15	9.711050	S.S.E. $\frac{3}{4}$ E.	S.S.W. $\frac{3}{4}$ W.
N.E. by N.	N.W. by N.	3	33	45	0	9.744739	S.E. by S.	S.W. by S.
N.E. by N. $\frac{1}{4}$ E.	N.W. by N. $\frac{1}{4}$ W.	$\frac{1}{4}$	36	33	45	9.775027	S.E. by S. $\frac{1}{4}$ E.	S.W. by S. $\frac{1}{4}$ W.
N.E. by N. $\frac{1}{2}$ E.	N.W. by N. $\frac{1}{2}$ W.	$\frac{1}{2}$	39	22	30	9.802359	S.E. by S. $\frac{1}{2}$ E.	S.W. by S. $\frac{1}{2}$ W.
N.E. by N. $\frac{3}{4}$ E.	N.W. by N. $\frac{3}{4}$ W.	$\frac{3}{4}$	42	11	15	9.827084	S.E. by S. $\frac{3}{4}$ E.	S.W. by S. $\frac{3}{4}$ W.
N.E.	N.W.	4	45	0	0	9.849485	S.E.	S.W.
N.E. $\frac{1}{4}$ E.	N.W. $\frac{1}{4}$ W.	$\frac{1}{4}$	47	48	45	9.869790	S.E. $\frac{1}{4}$ E.	S.W. $\frac{1}{4}$ W.
N.E. $\frac{1}{2}$ E.	N.W. $\frac{1}{2}$ W.	$\frac{1}{2}$	50	37	30	9.888185	S.E. $\frac{1}{2}$ E.	S.W. $\frac{1}{2}$ W.
N.E. $\frac{3}{4}$ E.	N.W. $\frac{3}{4}$ W.	$\frac{3}{4}$	53	26	15	9.904828	S.E. $\frac{3}{4}$ E.	S.W. $\frac{3}{4}$ W.
N.E. by E.	N.W. by W.	5	56	15	0	9.919846	S.E. by E.	S.W. by W.
N.E. by E. $\frac{1}{4}$ E.	N.W. by W. $\frac{1}{4}$ W.	$\frac{1}{4}$	59	3	45	9.933350	S.E. by E. $\frac{1}{4}$ E.	S.W. by W. $\frac{1}{4}$ W.
N.E. by E. $\frac{1}{2}$ E.	N.W. by W. $\frac{1}{2}$ W.	$\frac{1}{2}$	61	52	30	9.945430	S.E. by E. $\frac{1}{2}$ E.	S.W. by W. $\frac{1}{2}$ W.
N.E. by E. $\frac{3}{4}$ E.	N.W. by W. $\frac{3}{4}$ W.	$\frac{3}{4}$	64	41	15	9.956163	S.E. by E. $\frac{3}{4}$ E.	S.W. by W. $\frac{3}{4}$ W.
E.N.E.	W.N.W.	6	67	30	0	9.965615	E.S.E.	W.S.W.
E. by N. $\frac{1}{4}$ E.	W. by N. $\frac{1}{4}$ N.	$\frac{1}{4}$	70	18	45	9.973841	E. by S. $\frac{1}{4}$ S.	W. by S. $\frac{1}{4}$ S.
E. by N. $\frac{1}{2}$ E.	W. by N. $\frac{1}{2}$ N.	$\frac{1}{2}$	73	7	30	9.980885	E. by S. $\frac{1}{2}$ S.	W. by S. $\frac{1}{2}$ S.
E. by N. $\frac{3}{4}$ E.	W. by N. $\frac{3}{4}$ N.	$\frac{3}{4}$	75	56	15	9.986786	E. by S. $\frac{3}{4}$ S.	W. by S. $\frac{3}{4}$ S.
E. by N.	W. by N.	7	78	45	0	9.991574	E. by S.	W. by S.
E. $\frac{1}{4}$ N.	W. $\frac{1}{4}$ N.	$\frac{1}{4}$	81	33	45	9.995274	E. $\frac{1}{4}$ S.	W. $\frac{1}{4}$ S.
E. $\frac{1}{2}$ N.	W. $\frac{1}{2}$ N.	$\frac{1}{2}$	84	22	30	9.997904	E. $\frac{1}{2}$ S.	W. $\frac{1}{2}$ S.
E. $\frac{3}{4}$ N.	W. $\frac{3}{4}$ N.	$\frac{3}{4}$	87	11	15	9.999477	E. $\frac{3}{4}$ S.	W. $\frac{3}{4}$ S.

(e) Dip of the Sea Horizon.										Dip of a Shore Horizon. (f)														
Height of eye.	Dip.		Height of eye.	Dip.		Height of eye.	Dip.		Height of eye.	Dip.		Height of eye.	Dip.		Distance of the Shore.	Height of the eye above the Sea in feet.								
ft.	'	"	ft.	'	"	ft.	'	"	ft.	'	"	ft.	'	"		5	10	15	20	25	30	35	40	
1	0	59	15	3	49	29	5	18	59	7	34	110	10	19										
2	1	24	16	3	56	30	5	24	62	7	45	120	10	47	$\frac{1}{2}$	11	22	34	45	56	68	79	90	
3	1	42	17	4	4	31	5	29	65	7	56	130	11	14	$\frac{1}{4}$	6	11	17	22	28	34	39	45	
4	1	58	18	4	11	32	5	34	68	8	7	140	11	39	$\frac{1}{8}$	4	8	12	15	19	23	27	30	
5	2	12	19	4	17	33	5	39	71	8	18	150	12	3	1	4	6	9	12	15	17	20	23	
6	2	25	20	4	24	34	5	44	74	8	28	160	12	27	$1\frac{1}{2}$	3	5	7	9	12	14	16	19	
7	2	36	21	4	31	35	5	49	77	8	38	170	12	50	$1\frac{1}{4}$	3	4	6	8	10	12	14	15	
8	2	47	22	4	37	36	6	4	80	8	48	180	13	12	2	2	3	5	6	8	10	11	12	
9	2	57	23	4	43	37	6	18	83	8	58	190	13	33	$2\frac{1}{2}$	2	3	5	6	7	8	9	10	
10	3	7	24	4	49	38	6	32	86	9	8	200	13	55	3	2	3	4	5	6	7	8	8	
11	3	16	25	4	55	39	6	45	89	9	17	210	14	16	$3\frac{1}{2}$	2	3	4	5	6	6	7	7	
12	3	25	26	5	1	40	6	58	92	9	26	220	14	36	4	2	3	4	4	5	6	7	7	
13	3	33	27	5	7	41	7	10	95	9	36	230	14	56	5	2	3	4	4	5	5	6	6	
14	3	41	28	5	13	42	7	22	98	9	45	240	15	15	6	2	3	4	4	5	5	6	6	

Augmentation of the Moon's Hor. (g) Semidiameter.								Reduction of Hor. Par., and Lat. of Place, for Figure of Earth; both subtractive. (h)						
App. Alt.	14 40	15 0	15 20	15 40	16 0	16 20	16 40	Lat.	54'	56'	58'	60'	62'	Red. of Lat.
0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	6	0.1	0.1	0.1	0.1	0.1	2 15
6	1.5	1.6	1.7	1.8	1.9	2.0	2.0	12	0.4	0.4	0.4	0.5	0.5	4 24
8	2.0	2.1	2.2	2.3	2.4	2.5	2.6	18	0.9	1.0	1.0	1.1	1.1	6 22
10	2.6	2.7	2.8	2.9	3.0	3.1	3.3	24	1.6	1.7	1.8	1.9	1.9	8 3
12	3.2	3.3	3.3	3.4	3.6	3.7	3.9	30	2.5	2.6	2.7	2.8	2.9	9 23
14	3.5	3.6	3.8	3.9	4.1	4.3	4.5	36	3.5	3.6	3.7	3.9	4.0	10 19
16	3.9	4.1	4.3	4.5	4.7	4.9	5.1	42	4.5	4.7	4.9	5.1	5.2	10 48
18	4.4	4.6	4.8	5.0	5.2	5.4	5.6	48	5.6	5.8	6.0	6.2	6.4	10 48
20	4.8	5.0	5.3	5.6	5.8	6.0	6.2	54	6.6	6.9	7.1	7.4	7.6	10 20
22	5.2	5.5	5.8	6.1	6.3	6.6	6.8	60	7.6	7.9	8.2	8.5	8.7	9 25
24	5.7	6.0	6.3	6.6	6.8	7.1	7.4	66	8.5	8.8	9.1	9.4	9.7	8 5
26	6.1	6.4	6.8	7.1	7.4	7.7	8.0	72	9.2	9.5	9.9	10.2	10.6	6 24
28	6.6	6.9	7.2	7.6	7.9	8.2	8.5	78	9.7	10.1	10.5	10.8	11.2	4 26
30	7.1	7.4	7.7	8.0	8.4	8.7	9.0	84	10.1	10.4	10.8	11.2	11.6	2 16
32	7.5	7.8	8.2	8.5	8.9	9.2	9.6	90	10.2	10.6	11.0	11.3	11.7	0 0
34	7.8	8.2	8.6	9.0	9.3	9.7	10.1							
36	8.2	8.6	9.0	9.4	9.9	10.2	10.6							
38	8.6	9.0	9.4	9.9	10.3	10.7	11.1							
40	9.0	9.4	9.8	10.3	10.7	11.1	11.6							
42	9.4	9.8	10.2	10.7	11.2	11.6	12.1							
44	9.8	10.2	10.6	11.1	11.6	12.0	12.6							
46	10.0	10.5	11.0	11.5	12.0	12.5	13.0							
48	10.4	10.9	11.4	11.9	12.4	12.9	13.4							
50	10.7	11.2	11.7	12.2	12.8	13.3	13.8							
52	11.0	11.5	12.0	12.6	13.1	13.7	14.2							
54	11.3	11.8	12.4	12.9	13.5	14.1	14.6							
56	11.6	12.1	12.7	13.2	13.8	14.4	14.9							
58	11.8	12.4	12.9	13.6	14.2	14.7	15.3							
60	12.1	12.7	13.2	13.8	14.5	15.0	15.6							
62	12.3	12.9	13.5	14.1	14.7	15.3	15.9							
64	12.5	13.1	13.7	14.3	15.0	15.6	16.2							
66	12.8	13.4	13.9	14.6	15.2	15.8	16.5							
68	12.9	13.5	14.2	14.8	15.4	16.1	16.7							
70	13.1	13.7	14.4	15.0	15.7	16.3	16.9							
72	13.3	13.9	14.5	15.2	15.8	16.5	17.2							
74	13.4	14.0	14.7	15.3	16.0	16.7	17.4							
76	13.5	14.1	14.8	15.5	16.2	16.8	17.5							
78	13.7	14.3	14.9	15.6	16.3	16.9	17.6							
80	13.8	14.4	15.0	15.7	16.4	17.1	17.8							
82	13.8	14.4	15.1	15.8	16.5	17.2	17.8							
84	13.9	14.5	15.2	15.9	16.5	17.2	17.9							
86	13.9	14.5	15.2	15.9	16.6	17.3	18.0							
88	14.0	14.6	15.3	15.9	16.6	17.3	18.0							
90	14.0	14.6	15.3	16.0	16.7	17.3	18.0							

Reduction of Semid. on account of Refraction. (i)														
		Inclination to the Horizon.												
Alt.														
	0	12	24	36	48	54	60	66	72	78	84	90		
0	0	1	4	9	14	16	19	21	23	24	25	25		
6	0	1	3	7	10	12	14	16	17	18	19	19		
7	0	1	2	5	8	9	11	12	13	14	14	14		
8	0	0	2	4	6	7	8	9	10	11	11	11		
9	0	0	1	3	5	6	7	8	8	9	9	9		
10	0	0	1	3	4	5	6	6	7	7	8	8		
12	0	0	1	2	3	4	5	5	5	5	5	5		
14	0	0	1	1	2	3	3	3	4	4	4	4		
16	0	0	1	1	2	2	2	3	3	3	3	3		
20	0	0	0	1	1	1	2	2	2	2	2	2		
30	0	0	0	0	1	1	1	1	1	1	1	1		
50	0	0	0	0	0	0	0	0	0	0	0	0		
90	0	0	0	0	0	0	0	0	0	0	0	0		

Diff. Moon's Mer. Pass.	Correction in finding MOON'S Meridian Passage.																																	(k)				
	Long. (W. add) — (E. Subtract.)																																					
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180		
m. 40	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	16	16	17	17	18	18	19	19	20
44	1	1	2	2	3	4	4	5	5	6	7	7	8	9	9	10	10	11	11	12	12	13	13	14	15	15	16	16	17	18	18	19	20	20	21	21	22	
48	1	1	2	3	3	4	5	5	6	7	7	8	9	9	10	11	11	12	12	13	13	14	15	15	16	17	17	18	19	19	20	21	21	22	23	23	24	
52	1	1	2	3	4	4	5	6	6	7	8	8	9	9	10	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22	22	23	24	25	25	26	
56	1	2	2	3	4	5	5	6	7	7	8	9	9	10	11	12	12	13	14	15	16	16	17	18	19	19	20	21	22	23	23	24	25	26	26	27	28	
60	1	2	3	3	4	5	6	7	7	8	9	10	11	12	12	13	14	15	16	17	17	18	19	20	21	22	22	23	24	25	26	27	27	28	29	30		
64	1	2	3	4	4	5	6	7	8	9	10	11	12	12	13	14	15	16	17	18	19	20	20	21	22	23	24	25	26	27	28	28	29	30	31	31		
68	1	2	3	4	5	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	27	28	29	30	31	32	33			

Correction in finding Time of High Water. (l)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
Time of Moon's Mer. Passage.			Moon's Semidiameter.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
			14	30	14	45	15	0	15	15	15	30	15	45	16	0	16	15	16	30	16	45	17	0	17	15	17	30	17	45	18	0	18	15	18	30	18	45	19	0	19	15	19	30	19	45	20	0	20	15	20	30	20	45	21	0	21	15	21	30	21	45	22	0	22	15	22	30	22	45	23	0	23	15	23	30	23	45	24	0	24	15	24	30	24	45	25	0	25	15	25	30	25	45	26	0	26	15	26	30	26	45	27	0	27	15	27	30	27	45	28	0	28	15	28	30	28	45	29	0	29	15	29	30	29	45	30	0	30	15	30	30	30	45	31	0	31	15	31	30	31	45	32	0	32	15	32	30	32	45	33	0	33	15	33	30	33	45	34	0	34	15	34	30	34	45	35	0	35	15	35	30	35	45	36	0	36	15	36	30	36	45	37	0	37	15	37	30	37	45	38	0	38	15	38	30	38	45	39	0	39	15	39	30	39	45	40	0	40	15	40	30	40	45	41	0	41	15	41	30	41	45	42	0	42	15	42	30	42	45	43	0	43	15	43	30	43	45	44	0	44	15	44	30	44	45	45	0	45	15	45	30	45	45	46	0	46	15	46	30	46	45	47	0	47	15	47	30	47	45	48	0	48	15	48	30	48	45	49	0	49	15	49	30	49	45	50	0	50	15	50	30	50	45	51	0	51	15	51	30	51	45	52	0	52	15	52	30	52	45	53	0	53	15	53	30	53	45	54	0	54	15	54	30	54	45	55	0	55	15	55	30	55	45	56	0	56	15	56	30	56	45	57	0	57	15	57	30	57	45	58	0	58	15	58	30	58	45	59	0	59	15	59	30	59	45	60	0	60	15	60	30	60	45	61	0	61	15	61	30	61	45	62	0	62	15	62	30	62	45	63	0	63	15	63	30	63	45	64	0	64	15	64	30	64	45	65	0	65	15	65	30	65	45	66	0	66	15	66	30	66	45	67	0	67	15	67	30	67	45	68	0	68	15	68	30	68	45	69	0	69	15	69	30	69	45	70	0	70	15	70	30	70	45	71	0	71	15	71	30	71	45	72	0	72	15	72	30	72	45	73	0	73	15	73	30	73	45	74	0	74	15	74	30	74	45	75	0	75	15	75	30	75	45	76	0	76	15	76	30	76	45	77	0	77	15	77	30	77	45	78	0	78	15	78	30	78	45	79	0	79	15	79	30	79	45	80	0	80	15	80	30	80	45	81	0	81	15	81	30	81	45	82	0	82	15	82	30	82	45	83	0	83	15	83	30	83	45	84	0	84	15	84	30	84	45	85	0	85	15	85	30	85	45	86	0	86	15	86	30	86	45	87	0	87	15	87	30	87	45	88	0	88	15	88	30	88	45	89	0	89	15	89	30	89	45	90	0	90	15	90	30	90	45	91	0	91	15	91	30	91	45	92	0	92	15	92	30	92	45	93	0	93	15	93	30	93	45	94	0	94	15	94	30	94	45	95	0	95	15	95	30	95	45	96	0	96	15	96	30	96	45	97	0	97	15	97	30	97	45	98	0	98	15	98	30	98	45	99	0	99	15	99	30	99	45	100	0	100	15	100	30	100	45	101	0	101	15	101	30	101	45	102	0	102	15	102	30	102	45	103	0	103	15	103	30	103	45	104	0	104	15	104	30	104	45	105	0	105	15	105	30	105	45	106	0	106	15	106	30	106	45	107	0	107	15	107	30	107	45	108	0	108	15	108	30	108	45	109	0	109	15	109	30	109	45	110	0	110	15	110	30	110	45	111	0	111	15	111	30	111	45	112	0	112	15	112	30	112	45	113	0	113	15	113	30	113	45	114	0	114	15	114	30	114	45	115	0	115	15	115	30	115	45	116	0	116	15	116	30	116	45	117	0	117	15	117	30	117	45	118	0	118	15	118	30	118	45	119	0	119	15	119	30	119	45	120	0	120	15	120	30	120	45	121	0	121	15	121	30	121	45	122	0	122	15	122	30	122	45	123	0	123	15	123	30	123	45	124	0	124	15	124	30	124	45	125	0	125	15	125	30	125	45	126	0	126	15	126	30	126	45	127	0	127	15	127	30	127	45	128	0	128	15	128	30	128	45	129	0	129	15	129	30	129	45	130	0	130	15	130	30	130	45	131	0	131	15	131	30	131	45	132	0	132	15	132	30	132	45	133	0	133	15	133	30	133	45	134	0	134	15	134	30	134	45	135	0	135	15	135	30	135	45	136	0	136	15	136	30	136	45	137	0	137	15	137	30	137	45	138	0	138	15	138	30	138	45	139	0	139	15	139	30	139	45	140	0	140	15	140	30	140	45	141	0	141	15	141	30	141	45	142	0	142	15	142	30	142	45	143	0	143	15	143	30	143	45	144	0	144	15	144	30	144	45	145	0	145	15	145	30	145	45	146	0	146	15	146	30	146	45	147	0	147	15	147	30	147	45	148	0	148	15	148	30	148	45	149	0	149	15	149	30	149	45	150	0	150	15	150	30	150	45	151	0	151	15	151	30	151	45	152	0	152	15	152	30	152	45	153	0	153	15	153	30	153	45	154	0	154	15	154	30	154	45	155	0	155	15	155	30	155	45	156	0	156	15	156	30	156	45	157	0	157	15	157	30	157	45	158	0	158	15	158	30	158	45	159	0	159	15	159	30	159	45	160	0	160	15	160	30	160	45	161	0	161	15	161	30	161	45	162	0	162	15	162	30	162	45	163	0	163	15	163	30	163	45	164	0	164	15	164	30	164	45

(Ther. 50.)
(Bar. 30.)

Correction of the SUN's App. Alt. (*subtr.*)
(or Refraction — Parallax.)

☉

(m)

AA	Corr.	Diff.	AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.
—	—	for 10'	—	—	—	—	—	—	—	—	—	—
0 0	33 42	117	5 0	9 49	6 0	8 23	7 0	7 18	8 0	6 26	9 0	5 45
0 5	32 44	113	5 1	9 48	6 1	8 22	7 1	7 17	8 1	6 25	9 2	5 44
0 10	31 48	109	5 2	9 46	6 2	8 21	7 2	7 16	8 2	6 25	9 4	5 42
0 15	30 56	105	5 3	9 44	6 3	8 20	7 3	7 15	8 3	6 24	9 6	5 41
0 20	30 4	101	5 4	9 43	6 4	8 18	7 4	7 14	8 4	6 23	9 8	5 40
0 25	29 15	97	5 5	9 41	6 5	8 17	7 5	7 13	8 5	6 23	9 10	5 38
0 30	28 28	94	5 6	9 40	6 6	8 16	7 6	7 12	8 6	6 22	9 12	5 37
0 35	27 42	90	5 7	9 38	6 7	8 15	7 7	7 11	8 7	6 21	9 14	5 36
0 40	26 57	87	5 8	9 36	6 8	8 14	7 8	7 10	8 8	6 21	9 16	5 35
0 45	26 15	84	5 9	9 35	6 9	8 13	7 9	7 9	8 9	6 20	9 18	5 33
0 50	25 34	80	5 10	9 33	6 10	8 11	7 10	7 8	8 10	6 19	9 20	5 32
0 55	24 54	77	5 11	9 32	6 11	8 10	7 11	7 7	8 11	6 19	9 22	5 31
1 0	24 16	74	5 12	9 31	6 12	8 9	7 12	7 6	8 12	6 18	9 24	5 30
1 5	23 39	71	5 13	9 29	6 13	8 8	7 13	7 6	8 13	6 17	9 26	5 29
1 10	23 4	69	5 14	9 27	6 14	8 7	7 14	7 5	8 14	6 16	9 28	5 28
1 15	22 31	66	5 15	9 26	6 15	8 6	7 15	7 4	8 15	6 16	9 30	5 27
1 20	21 59	63	5 16	9 24	6 16	8 5	7 16	7 3	8 16	6 15	9 32	5 26
1 25	21 28	61	5 17	9 23	6 17	8 4	7 17	7 2	8 17	6 14	9 34	5 25
1 30	20 58	59	5 18	9 21	6 18	8 2	7 18	7 1	8 18	6 14	9 36	5 24
1 35	20 29	57	5 19	9 20	6 19	8 1	7 19	7 0	8 19	6 13	9 38	5 22
1 40	20 1	55	5 20	9 18	6 20	8 0	7 20	6 59	8 20	6 12	9 40	5 21
1 45	19 34	53	5 21	9 17	6 21	7 59	7 21	6 58	8 21	6 12	9 42	5 20
1 50	19 8	51	5 22	9 15	6 22	7 58	7 22	6 57	8 22	6 11	9 44	5 19
1 55	18 43	49	5 23	9 13	6 23	7 57	7 23	6 57	8 23	6 10	9 46	5 18
2 0	18 20	48	5 24	9 12	6 24	7 56	7 24	6 56	8 24	6 9	9 48	5 17
2 5	17 56	46	5 25	9 10	6 25	7 55	7 25	6 55	8 25	6 9	9 50	5 16
2 10	17 34	44	5 26	9 9	6 26	7 54	7 26	6 54	8 26	6 8	9 52	5 15
2 15	17 12	43	5 27	9 7	6 27	7 53	7 27	6 53	8 27	6 7	9 54	5 14
2 20	16 51	41	5 28	9 5	6 28	7 51	7 28	6 52	8 28	6 7	9 56	5 13
2 25	16 31	40	5 29	9 4	6 29	7 50	7 29	6 51	8 29	6 6	9 58	5 12
2 30	16 12	39	5 30	9 2	6 30	7 49	7 30	6 50	8 30	6 5	10 0	5 11
2 35	15 53	37	5 31	9 1	6 31	7 48	7 31	6 49	8 31	6 5	10 2	5 10
2 40	15 34	36	5 32	9 0	6 32	7 47	7 32	6 49	8 32	6 4	10 4	5 9
2 45	15 16	35	5 33	8 58	6 33	7 46	7 33	6 48	8 33	6 3	10 6	5 8
2 50	14 59	34	5 34	8 57	6 34	7 45	7 34	6 47	8 34	6 2	10 8	5 7
2 55	14 42	33	5 35	8 56	6 35	7 44	7 35	6 46	8 35	6 2	10 10	5 6
3 0	14 26	32	5 36	8 54	6 36	7 43	7 36	6 45	8 36	6 1	10 12	5 5
3 5	14 10	31	5 37	8 53	6 37	7 42	7 37	6 45	8 37	6 0	10 14	5 4
3 10	13 55	30	5 38	8 52	6 38	7 40	7 38	6 44	8 38	6 0	10 16	5 3
3 15	13 41	29	5 39	8 51	6 39	7 39	7 39	6 43	8 39	5 59	10 18	5 2
3 20	13 26	28	5 40	8 49	6 40	7 38	7 40	6 42	8 40	5 58	10 20	5 1
3 25	13 12	27	5 41	8 48	6 41	7 37	7 41	6 41	8 41	5 58	10 22	5 0
3 30	12 58	27	5 42	8 47	6 42	7 36	7 42	6 41	8 42	5 57	10 24	4 59
3 35	12 44	26	5 43	8 45	6 43	7 35	7 43	6 40	8 43	5 56	10 26	4 58
3 40	12 32	25	5 44	8 44	6 44	7 34	7 44	6 39	8 44	5 55	10 28	4 57
3 45	12 19	24	5 45	8 43	6 45	7 33	7 45	6 38	8 45	5 55	10 30	4 56
3 50	12 7	24	5 46	8 41	6 46	7 32	7 46	6 37	8 46	5 54	10 32	4 55
3 55	11 54	23	5 47	8 40	6 47	7 31	7 47	6 37	8 47	5 53	10 34	4 54
4 0	11 43	22	5 48	8 39	6 48	7 30	7 48	6 36	8 48	5 53	10 36	4 53
4 5	11 37	21	5 49	8 38	6 49	7 29	7 49	6 35	8 49	5 52	10 38	4 52
4 10	11 21	20	5 50	8 36	6 50	7 28	7 50	6 34	8 50	5 51	10 40	4 51
4 15	11 11	20	5 51	8 35	6 51	7 27	7 51	6 33	8 51	5 51	10 42	4 50
4 20	11 1	20	5 52	8 34	6 52	7 26	7 52	6 33	8 52	5 50	10 44	4 50
4 25	10 51	19	5 53	8 32	6 53	7 25	7 53	6 32	8 53	5 49	10 46	4 49
4 30	10 41	18	5 54	8 31	6 54	7 24	7 54	6 31	8 54	5 49	10 48	4 48
4 35	10 32	18	5 55	8 30	6 55	7 23	7 55	6 30	8 55	5 48	10 50	4 47
4 40	10 23	17	5 56	8 28	6 56	7 22	7 56	6 29	8 56	5 48	10 52	4 46
4 45	10 15	17	5 57	8 27	6 57	7 21	7 57	6 29	8 57	5 47	10 54	4 45
4 50	10 6	17	5 58	8 26	6 58	7 20	7 58	6 28	8 58	5 46	10 56	4 44
4 55	9 58	16	5 59	8 25	6 59	7 19	7 59	6 27	8 59	5 46	10 58	4 43

⊙

Correction of the SUN's App. Alt. (subtr.)
(or Refraction — Parallax.)

(Ther. 50.)
(Bar 30.)

(m)

AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.
11 0	4 42	13 0	3 59	15 0	3 26	20 0	2 30	30 0	1 33	50 0	0 43
11 2	4 42	13 2	3 58	15 5	3 25	20 10	2 29	30 20	1 32	50 30	0 42
11 4	4 41	13 4	3 58	15 10	3 23	20 20	2 28	30 40	1 30	51 0	0 42
11 6	4 40	13 6	3 57	15 15	3 22	20 30	2 26	31 0	1 29	51 30	0 41
11 8	4 39	13 8	3 56	15 20	3 21	20 40	2 25	31 20	1 28	52 0	0 40
11 10	4 38	13 10	3 56	15 25	3 20	20 50	2 23	31 40	1 27	52 30	0 39
11 12	4 38	13 12	3 55	15 30	3 19	21 0	2 22	32 0	1 25	53 0	0 38
11 14	4 37	13 14	3 55	15 35	3 18	21 10	2 21	32 20	1 24	53 30	0 38
11 16	4 36	13 16	3 54	15 40	3 17	21 20	2 20	32 40	1 23	54 0	0 37
11 18	4 35	13 18	3 53	15 45	3 15	21 30	2 19	33 0	1 22	54 30	0 36
11 20	4 34	13 20	3 53	15 50	3 14	21 40	2 17	33 20	1 21	55 0	0 36
11 22	4 34	13 22	3 52	15 55	3 13	21 50	2 16	33 40	1 20	55 30	0 35
11 24	4 33	13 24	3 52	16 0	3 12	22 0	2 15	34 0	1 19	56 0	0 34
11 26	4 32	13 26	3 51	16 5	3 11	22 10	2 14	34 20	1 18	56 30	0 33
11 28	4 31	13 28	3 50	16 10	3 10	22 20	2 13	34 40	1 17	57 0	0 33
11 30	4 30	13 30	3 50	16 15	3 9	22 30	2 12	35 0	1 16	57 30	0 32
11 32	4 30	13 32	3 49	16 20	3 8	22 40	2 11	35 20	1 15	58 0	0 32
11 34	4 29	13 34	3 49	16 25	3 7	22 50	2 9	35 40	1 14	58 30	0 31
11 36	4 28	13 36	3 48	16 30	3 6	23 0	2 8	36 0	1 13	59 0	0 30
11 38	4 27	13 38	3 48	16 35	3 5	23 10	2 7	36 20	1 12	59 30	0 30
11 40	4 26	13 40	3 47	16 40	3 4	23 20	2 6	36 40	1 11	60 0	0 29
11 42	4 26	13 42	3 46	16 45	3 3	23 30	2 5	37 0	1 10	60 30	0 28
11 44	4 25	13 44	3 46	16 50	3 2	23 40	2 4	37 20	1 9	61 0	0 28
11 46	4 24	13 46	3 45	16 55	3 1	23 50	2 3	37 40	1 8	61 30	0 27
11 48	4 23	13 48	3 45	17 0	3 0	24 0	2 2	38 0	1 7	62 0	0 27
11 50	4 22	13 50	3 44	17 5	2 59	24 10	2 1	38 20	1 7	62 30	0 26
11 52	4 22	13 52	3 44	17 10	2 58	24 20	2 0	38 40	1 6	63 0	0 26
11 54	4 21	13 54	3 43	17 15	2 57	24 30	1 59	39 0	1 5	63 30	0 25
11 56	4 21	13 56	3 42	17 20	2 56	24 40	1 58	39 20	1 4	64 0	0 24
11 58	4 20	13 58	3 42	17 25	2 55	24 50	1 57	39 40	1 3	64 30	0 24
12 0	4 19	14 0	3 41	17 30	2 54	25 0	1 56	40 0	1 3	65 0	0 23
12 2	4 19	14 2	3 41	17 35	2 54	25 10	1 55	40 20	1 2	65 30	0 23
12 4	4 18	14 4	3 40	17 40	2 53	25 20	1 54	40 40	1 1	66 0	0 22
12 6	4 17	14 6	3 40	17 45	2 52	25 30	1 54	41 0	1 0	66 30	0 22
12 8	4 16	14 8	3 39	17 50	2 51	25 40	1 53	41 20	0 59	67 0	0 21
12 10	4 16	14 10	3 39	17 55	2 50	25 50	1 52	41 40	0 59	67 30	0 21
12 12	4 15	14 12	3 38	18 0	2 49	26 0	1 51	42 0	0 58	68 0	0 20
12 14	4 14	14 14	3 38	18 5	2 48	26 10	1 50	42 20	0 57	69 0	0 19
12 16	4 14	14 16	3 37	18 10	2 47	26 20	1 49	42 40	0 57	70 0	0 18
12 18	4 13	14 18	3 36	18 15	2 47	26 30	1 48	43 0	0 56	71 0	0 17
12 20	4 12	14 20	3 36	18 20	2 46	26 40	1 48	43 20	0 55	72 0	0 16
12 22	4 11	14 22	3 35	18 25	2 45	26 50	1 47	43 40	0 55	73 0	0 15
12 24	4 11	14 24	3 35	18 30	2 44	27 0	1 46	44 0	0 54	74 0	0 14
12 26	4 10	14 26	3 34	18 35	2 43	27 10	1 45	44 20	0 53	75 0	0 13
12 28	4 9	14 28	3 34	18 40	2 43	27 20	1 44	44 40	0 53	76 0	0 12
12 30	4 9	14 30	3 33	18 45	2 42	27 30	1 44	45 0	0 52	77 0	0 11
12 32	4 8	14 32	3 33	18 50	2 41	27 40	1 43	45 20	0 51	78 0	0 10
12 34	4 7	14 34	3 32	18 55	2 40	27 50	1 42	45 40	0 51	79 0	0 9
12 36	4 7	14 36	3 32	19 0	2 39	28 0	1 41	46 0	0 50	80 0	0 9
12 38	4 6	14 38	3 31	19 5	2 39	28 10	1 41	46 20	0 49	81 0	0 8
12 40	4 5	14 40	3 31	19 10	2 38	28 20	1 40	46 40	0 49	82 0	0 7
12 42	4 5	14 42	3 30	19 15	2 37	28 30	1 39	47 0	0 48	83 0	0 6
12 44	4 4	14 44	3 30	19 20	2 36	28 40	1 38	47 20	0 47	84 0	0 5
12 46	4 3	14 46	3 29	19 25	2 36	28 50	1 38	47 40	0 47	85 0	0 4
12 48	4 3	14 48	3 29	19 30	2 35	29 0	1 37	48 0	0 46	86 0	0 4
12 50	4 2	14 50	3 28	19 35	2 34	29 10	1 36	48 20	0 46	87 0	0 3
12 52	4 1	14 52	3 28	19 40	2 33	29 20	1 36	48 40	0 45	88 0	0 2
12 54	4 1	14 54	3 27	19 45	2 33	29 30	1 35	49 0	0 45	89 0	0 1
12 56	4 0	14 56	3 27	19 50	2 32	29 40	1 34	49 20	0 44	90 0	0 0
12 58	3 59	14 58	3 26	19 55	2 31	29 50	1 33	49 40	0 44		

(Ther. 50.)

(Bar. 30.)

Correction of a STAR's App. Alt. (*subtr.*)
(or Refraction in Alt.)

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(n)

AA	Corr.	Diff. for 10'	AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.
0 0	33 51	117	5 0	9 58	6 0	8 32	7 0	7 27	8 0	6 35	9 0	5 54
0 5	32 53	113	5 1	9 56	6 1	8 31	7 1	7 26	8 1	6 34	9 2	5 53
0 10	31 58	109	5 2	9 55	6 2	8 30	7 2	7 25	8 2	6 34	9 4	5 51
0 15	31 5	106	5 3	9 53	6 3	8 28	7 3	7 24	8 3	6 33	9 6	5 50
0 20	30 13	101	5 4	9 52	6 4	8 27	7 4	7 23	8 4	6 32	9 8	5 48
0 25	29 24	97	5 5	9 50	6 5	8 26	7 5	7 22	8 5	6 31	9 10	5 47
0 30	28 37	94	5 6	9 48	6 6	8 25	7 6	7 21	8 6	6 31	9 12	5 46
0 35	27 51	90	5 7	9 47	6 7	8 24	7 7	7 20	8 7	6 30	9 14	5 45
0 40	27 6	87	5 8	9 45	6 8	8 22	7 8	7 19	8 8	6 29	9 16	5 43
0 45	26 24	84	5 9	9 44	6 9	8 21	7 9	7 18	8 9	6 29	9 18	5 42
0 50	25 43	80	5 10	9 42	6 10	8 20	7 10	7 17	8 10	6 28	9 20	5 41
0 55	25 3	77	5 11	9 40	6 11	8 19	7 11	7 16	8 11	6 27	9 22	5 40
1 0	24 25	74	5 12	9 39	6 12	8 18	7 12	7 15	8 12	6 27	9 24	5 39
1 5	23 48	71	5 13	9 37	6 13	8 17	7 13	7 14	8 13	6 26	9 26	5 38
1 10	23 13	69	5 14	9 36	6 14	8 16	7 14	7 13	8 14	6 25	9 28	5 37
1 15	22 40	66	5 15	9 34	6 15	8 14	7 15	7 12	8 15	6 24	9 30	5 36
1 20	22 8	63	5 16	9 33	6 16	8 13	7 16	7 12	8 16	6 24	9 32	5 35
1 25	21 37	61	5 17	9 31	6 17	8 12	7 17	7 11	8 17	6 23	9 34	5 34
1 30	21 7	59	5 18	9 30	6 18	8 11	7 18	7 10	8 18	6 22	9 36	5 32
1 35	20 38	57	5 19	9 28	6 19	8 10	7 19	7 9	8 19	6 22	9 38	5 31
1 40	20 10	55	5 20	9 27	6 20	8 9	7 20	7 8	8 20	6 21	9 40	5 30
1 45	19 43	53	5 21	9 25	6 21	8 8	7 21	7 7	8 21	6 20	9 42	5 29
1 50	19 17	51	5 22	9 24	6 22	8 7	7 22	7 6	8 22	6 20	9 44	5 28
1 55	18 52	49	5 23	9 22	6 23	8 6	7 23	7 5	8 23	6 19	9 46	5 27
2 0	18 29	48	5 24	9 21	6 24	8 5	7 24	7 4	8 24	6 18	9 48	5 26
2 5	18 5	46	5 25	9 19	6 25	8 3	7 25	7 3	8 25	6 17	9 50	5 25
2 10	17 43	44	5 26	9 17	6 26	8 2	7 26	7 3	8 26	6 17	9 52	5 24
2 15	17 21	43	5 27	9 16	6 27	8 1	7 27	7 2	8 27	6 16	9 54	5 23
2 20	17 0	41	5 28	9 14	6 28	8 0	7 28	7 1	8 28	6 15	9 56	5 22
2 25	16 40	40	5 29	9 13	6 29	7 59	7 29	7 0	8 29	6 15	9 58	5 21
2 30	16 21	39	5 30	9 11	6 30	7 58	7 30	6 50	8 30	6 14	10 0	5 20
2 35	16 2	37	5 31	9 10	6 31	7 57	7 31	6 58	8 31	6 13	10 2	5 19
2 40	15 43	36	5 32	9 8	6 32	7 56	7 32	6 57	8 32	6 13	10 4	5 18
2 45	15 25	35	5 33	9 7	6 33	7 55	7 33	6 57	8 33	6 12	10 6	5 17
2 50	15 8	34	5 34	9 6	6 34	7 54	7 34	6 56	8 34	6 11	10 8	5 16
2 55	14 51	33	5 35	9 4	6 35	7 52	7 35	6 55	8 35	6 10	10 10	5 15
3 0	14 35	32	5 36	9 3	6 36	7 51	7 36	6 54	8 36	6 10	10 12	5 14
3 5	14 19	31	5 37	9 2	6 37	7 50	7 37	6 53	8 37	6 9	10 14	5 13
3 10	14 4	30	5 38	9 1	6 38	7 49	7 38	6 53	8 38	6 8	10 16	5 12
3 15	13 50	29	5 39	8 59	6 39	7 48	7 39	6 52	8 39	6 8	10 18	5 11
3 20	13 35	28	5 40	8 58	6 40	7 47	7 40	6 51	8 40	6 7	10 20	5 10
3 25	13 21	27	5 41	8 57	6 41	7 46	7 41	6 50	8 41	6 6	10 22	5 9
3 30	13 7	27	5 42	8 55	6 42	7 45	7 42	6 49	8 42	6 6	10 24	5 8
3 35	12 53	26	5 43	8 54	6 43	7 44	7 43	6 49	8 43	6 5	10 26	5 7
3 40	12 41	25	5 44	8 53	6 44	7 43	7 44	6 48	8 44	6 4	10 28	5 6
3 45	12 28	24	5 45	8 51	6 45	7 42	7 45	6 47	8 45	6 3	10 30	5 5
3 50	12 16	24	5 46	8 50	6 46	7 41	7 46	6 46	8 46	6 3	10 32	5 4
3 55	12 3	23	5 47	8 49	6 47	7 40	7 47	6 45	8 47	6 2	10 34	5 3
4 0	11 52	23	5 48	8 48	6 48	7 39	7 48	6 45	8 48	6 1	10 36	5 2
4 5	11 41	21	5 49	8 46	6 49	7 38	7 49	6 44	8 49	6 1	10 38	5 1
4 10	11 30	20	5 50	8 45	6 50	7 37	7 50	6 43	8 50	6 0	10 40	5 0
4 15	11 20	20	5 51	8 44	6 51	7 36	7 51	6 42	8 51	5 59	10 42	4 59
4 20	11 10	20	5 52	8 42	6 52	7 35	7 52	6 41	8 52	5 59	10 44	4 58
4 25	11 0	19	5 53	8 41	6 53	7 34	7 53	6 41	8 53	5 58	10 46	4 58
4 30	10 50	18	5 54	8 40	6 54	7 33	7 54	6 40	8 54	5 58	10 48	4 57
4 35	10 41	18	5 55	8 38	6 55	7 32	7 55	6 39	8 55	5 57	10 50	4 56
4 40	10 32	17	5 56	8 37	6 56	7 31	7 56	6 38	8 56	5 56	10 52	4 55
4 45	10 23	17	5 57	8 36	6 57	7 30	7 57	6 37	8 57	5 56	10 54	4 54
4 50	10 15	17	5 58	8 35	6 58	7 29	7 58	6 37	8 58	5 55	10 56	4 53
4 55	10 7	16	5 59	8 33	6 59	7 28	7 59	6 36	8 59	5 55	10 58	4 52

Correction of a STAR's App. Alt. (<i>subtr.</i>)												(Ther. 50.)
(or Refraction in Alt.)												(Bar. 30.)
(n)												
AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.	AA	Corr.	
1 0	4 51	13 0	4 7	15 0	3 34	20 0	2 39	30 0	1 40	50 0	0 49	
1 2	4 50	13 2	4 7	15 5	3 33	20 10	2 37	30 20	1 39	50 30	0 48	
1 4	4 49	13 4	4 6	15 10	3 32	20 20	2 36	30 40	1 38	51 0	0 47	
1 6	4 49	13 6	4 6	15 15	3 31	20 30	2 35	31 0	1 37	51 30	0 46	
1 8	4 48	13 8	4 5	15 20	3 30	20 40	2 33	31 20	1 35	52 0	0 45	
1 10	4 47	13 10	4 4	15 25	3 28	20 50	2 32	31 40	1 34	52 30	0 45	
1 12	4 46	13 12	4 4	15 30	3 27	21 0	2 30	32 0	1 33	53 0	0 44	
1 14	4 45	13 14	4 3	15 35	3 26	21 10	2 29	32 20	1 32	53 30	0 43	
1 16	4 45	13 16	4 3	15 40	3 25	21 20	2 28	32 40	1 31	54 0	0 42	
1 18	4 44	13 18	4 2	15 45	3 24	21 30	2 27	33 0	1 29	54 30	0 41	
1 20	4 43	13 20	4 1	15 50	3 23	21 40	2 26	33 20	1 28	55 0	0 41	
1 22	4 42	13 22	4 1	15 55	3 22	21 50	2 24	33 40	1 27	55 30	0 40	
1 24	4 41	13 24	4 0	16 0	3 21	22 0	2 23	34 0	1 26	56 0	0 39	
1 26	4 41	13 26	4 0	16 5	3 20	22 10	2 22	34 20	1 25	56 30	0 38	
1 28	4 40	13 28	3 59	16 10	3 18	22 20	2 21	34 40	1 24	57 0	0 38	
1 30	4 39	13 30	3 58	16 15	3 17	22 30	2 20	35 0	1 23	57 30	0 37	
1 32	4 38	13 32	3 58	16 20	3 16	22 40	2 19	35 20	1 22	58 0	0 36	
1 34	4 37	13 34	3 57	16 25	3 15	22 50	2 18	35 40	1 21	58 30	0 36	
1 36	4 37	13 36	3 57	16 30	3 14	23 0	2 16	36 0	1 20	59 0	0 35	
1 38	4 36	13 38	3 56	16 35	3 13	23 10	2 15	36 20	1 19	59 30	0 34	
1 40	4 35	13 40	3 55	16 40	3 12	23 20	2 14	36 40	1 18	60 0	0 34	
1 42	4 34	13 42	3 55	16 45	3 11	23 30	2 13	37 0	1 17	60 30	0 33	
1 44	4 33	13 44	3 54	16 50	3 10	23 40	2 12	37 20	1 16	61 0	0 32	
1 46	4 33	13 46	3 54	16 55	3 9	23 50	2 11	37 40	1 15	61 30	0 32	
1 48	4 32	13 48	3 53	17 0	3 8	24 0	2 10	38 0	1 14	62 0	0 31	
1 50	4 31	13 50	3 53	17 5	3 7	24 10	2 9	38 20	1 13	62 30	0 30	
1 52	4 30	13 52	3 52	17 10	3 7	24 20	2 8	38 40	1 13	63 0	0 30	
1 54	4 30	13 54	3 51	17 15	3 6	24 30	2 7	39 0	1 12	63 30	0 29	
1 56	4 29	13 56	3 51	17 20	3 5	24 40	2 6	39 20	1 11	64 0	0 28	
1 58	4 29	13 58	3 50	17 25	3 4	24 50	2 5	39 40	1 10	64 30	0 28	
2 0	4 28	14 0	3 50	17 30	3 3	25 0	2 4	40 0	1 9	65 0	0 27	
2 2	4 27	14 2	3 49	17 35	3 2	25 10	2 3	40 20	1 8	65 30	0 26	
2 4	4 27	14 4	3 49	17 40	3 1	25 20	2 2	40 40	1 8	66 0	0 26	
2 6	4 26	14 6	3 48	17 45	3 0	25 30	2 1	41 0	1 7	66 30	0 25	
2 8	4 25	14 8	3 48	17 50	2 59	25 40	2 1	41 20	1 6	67 0	0 25	
2 10	4 24	14 10	3 47	17 55	2 58	25 50	2 0	41 40	1 5	67 30	0 24	
2 12	4 24	14 12	3 47	18 0	2 58	26 0	1 59	42 0	1 5	68 0	0 23	
2 14	4 23	14 14	3 46	18 5	2 57	26 10	1 58	42 20	1 4	69 0	0 22	
2 16	4 22	14 16	3 45	18 10	2 56	26 20	1 57	42 40	1 3	70 0	0 21	
2 18	4 21	14 18	3 45	18 15	2 55	26 30	1 56	43 0	1 2	71 0	0 20	
2 20	4 21	14 20	3 44	18 20	2 54	26 40	1 55	43 20	1 2	72 0	0 19	
2 22	4 20	14 22	3 44	18 25	2 53	26 50	1 55	43 40	1 1	73 0	0 18	
2 24	4 19	14 24	3 43	18 30	2 53	27 0	1 54	44 0	1 0	74 0	0 17	
2 26	4 19	14 26	3 43	18 35	2 52	27 10	1 53	44 20	1 0	75 0	0 15	
2 28	4 18	14 28	3 42	18 40	2 51	27 20	1 52	44 40	0 59	76 0	0 14	
2 30	4 17	14 30	3 42	18 45	2 50	27 30	1 51	45 0	0 58	77 0	0 13	
2 32	4 17	14 32	3 41	18 50	2 49	27 40	1 51	45 20	0 57	78 0	0 12	
2 34	4 16	14 34	3 41	18 55	2 48	27 50	1 50	45 40	0 57	79 0	0 11	
2 36	4 15	14 36	3 40	19 0	2 48	28 0	1 49	46 0	0 56	80 0	0 10	
2 38	4 15	14 38	3 40	19 5	2 47	28 10	1 48	46 20	0 55	81 0	0 9	
2 40	4 14	14 40	3 39	19 10	2 46	28 20	1 48	46 40	0 55	82 0	0 8	
2 42	4 13	14 42	3 39	19 15	2 45	28 30	1 47	47 0	0 54	83 0	0 7	
2 44	4 13	14 44	3 38	19 20	2 45	28 40	1 46	47 20	0 53	84 0	0 6	
2 46	4 12	14 46	3 38	19 25	2 44	28 50	1 45	47 40	0 53	85 0	0 5	
2 48	4 11	14 48	3 37	19 30	2 43	29 0	1 45	48 0	0 52	86 0	0 4	
2 50	4 11	14 50	3 37	19 35	2 42	29 10	1 44	48 20	0 52	87 0	0 3	
2 52	4 10	14 52	3 36	19 40	2 42	29 20	1 43	48 40	0 51	88 0	0 2	
2 54	4 9	14 54	3 36	19 45	2 41	29 30	1 43	49 0	0 50	89 0	0 1	
2 56	4 9	14 56	3 35	19 50	2 40	29 40	1 42	49 20	0 50	90 0	0 0	
2 58	4 8	14 58	3 35	19 55	2 39	29 50	1 41	49 40	0 49			

Table (o). For finding at what time the Sun passes the Prime Vertical.

Lat.	Dist.	Lat.	Dist.	Lat.	Dist.	Lat.	Dist.	Lat.	Dist.	Lat.	Dist.	Lat.	Dist.	Lat.	Dist.
0		0		0		0		0		0		0		0	
1	1.7	9	15.8	17	30.5	25	46.6	33	64.9	41	86.9	49	115.0	57	154.0
2	3.5	10	17.6	18	32.4	26	48.7	34	67.4	42	90.0	50	119.2	58	160.1
3	5.2	11	19.4	19	34.4	27	50.9	35	70.0	43	93.2	51	123.5	59	166.5
4	7.0	12	21.2	20	36.4	28	53.1	36	72.6	44	96.5	52	128.0	60	173.2
5	8.7	13	23.0	21	38.4	29	55.4	37	75.3	45	100.0	53	132.7	61	180.4
6	10.5	14	24.9	22	40.4	30	57.7	38	78.1	46	103.6	54	137.6	62	188.1
7	12.2	15	26.8	23	42.4	31	60.0	39	80.9	47	107.3	55	142.8	63	196.2
8	14.0	16	28.6	24	44.5	32	62.4	40	83.9	48	111.0	56	148.3	64	205.0
Dec.	Dep.	Dec.	Dep.	Dec.	Dep.	Dec.	Dep.	Dec.	Dep.	Dec.	Dep.	Dec.	Dep.	Dec.	Dep.

(I.) With Lat. and Dec. take out Dist. and Dep. (II.) From Traversa Table take corresponding Course. (III.) The Time will be found in Azimuth Table, opposite the Degrees of this Course.

N.B. From the above Table and the Azimuth Table can be determined with sufficient accuracy the Variation or Deviation at sea.

AZIMUTH TABLE.

App. T. from Noon.	N.	Deg.	App. T. from Noon.	N.	Deg.	App. T. from Noon.	N.	Deg.	App. T. from Noon.	N.	Deg.	App. T. from Noon.	N.	Deg.
h. m.			h. m.			h. m.			h. m.			h. m.		
0 0	0.0	90	1 12	77.3	72	2 24	146.9	54	3 36	202.3	36	4 48	237.8	18
4	4.4	89	16	81.4	71	28	150.5	53	40	204.8	35	52	239.1	17
8	8.7	88	20	85.5	70	32	153.9	52	44	207.3	34	56	240.3	16
12	13.1	87	24	89.6	69	36	157.3	51	48	209.7	33	5 0	241.5	15
16	17.4	86	28	93.7	68	40	160.7	50	52	212.0	32	4	242.6	14
20	21.8	85	32	97.7	67	44	164.0	49	56	214.3	31	8	243.6	13
24	26.1	84	36	101.7	66	48	167.3	48	4 0	216.5	30	12	244.5	12
28	30.5	83	40	105.7	65	52	170.5	47	4	218.7	29	16	245.4	11
32	34.8	82	44	109.6	64	56	173.7	46	8	220.7	28	20	246.2	10
36	39.1	81	48	113.5	63	3 0	176.8	45	12	222.8	27	24	246.9	9
40	43.4	80	52	117.4	62	4	179.8	44	16	224.7	26	28	247.6	8
44	47.7	79	56	121.2	61	8	182.8	43	20	226.6	25	32	248.1	7
48	52.0	78	2 0	125.0	60	12	185.8	42	24	228.4	24	36	248.6	6
52	56.2	77	4	128.8	59	16	188.7	41	28	230.1	23	40	249.0	5
56	60.5	76	8	132.5	58	20	191.5	40	32	231.8	22	44	249.4	4
1 0	64.7	75	12	136.2	57	24	194.3	39	36	233.4	21	48	249.7	3
4	68.9	74	16	139.8	56	28	197.0	38	40	234.9	20	52	249.8	2
8	73.1	73	20	143.4	55	32	199.7	37	44	236.4	19	56	249.9	1
												6 0	250.0	0
	Dist.	Alt.		Dist.	Alt.		Dist.	Alt.		Dist.	Alt.		Dist.	Alt.

(I.) For App. Time from Noon take out N. (II.) With N. as dist. and codeclin. as course, find dep. (Trav. Table). (III.) For Altitude take out dist. The course corresponding to this dist. and the above dep. will be Azimuth, which mark N. or S., according as Sun is N. or S. of Prime Vertical, and E. or W. as the time is A.M. or P.M.

(o)5

LOGISTIC LOGARITHMS

Sec.	0 ^m	1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m	8 ^m	9 ^m
0		1.77815	1.47712	1.30103	1.17609	1.07918	1.00000	.93305	.87506	.82391
2	3.25527	1.76391	1.46994	1.29623	1.17249	1.07630	.99760	.93099	.87326	.82230
4	2.95424	1.75012	1.46288	1.29149	1.16891	1.07343	.99520	.92894	.87146	.82070
6	2.77815	1.73676	1.45593	1.28679	1.16537	1.07058	.99282	.92689	.86967	.81911
8	2.65321	1.72379	1.44909	1.28215	1.16185	1.06775	.99046	.92486	.86788	.81752
10	2.55630	1.71121	1.44236	1.27755	1.15836	1.06494	.98810	.92284	.86611	.81594
12	2.47712	1.69897	1.43573	1.27300	1.15490	1.06215	.98576	.92082	.86433	.81436
14	2.41018	1.68707	1.42920	1.26850	1.15147	1.05937	.98343	.91881	.86258	.81279
16	2.35218	1.67549	1.42276	1.26405	1.14806	1.05662	.98112	.91682	.86082	.81123
18	2.30103	1.66421	1.41642	1.25964	1.14468	1.05388	.97881	.91483	.85907	.80967
20	2.25527	1.65321	1.41018	1.25527	1.14133	1.05115	.97652	.91285	.85733	.80812
22	2.21388	1.64249	1.40402	1.25095	1.13800	1.04845	.97424	.91088	.85560	.80657
24	2.17609	1.63202	1.39794	1.24667	1.13470	1.04576	.97197	.90892	.85387	.80503
26	2.14133	1.62181	1.39195	1.24244	1.13142	1.04309	.96972	.90697	.85215	.80349
28	2.10915	1.61182	1.38604	1.23824	1.12817	1.04043	.96747	.90503	.85044	.80196
30	2.07918	1.60206	1.38021	1.23408	1.12494	1.03779	.96524	.90309	.84873	.80043
32	2.05115	1.59252	1.37446	1.22997	1.12173	1.03517	.96302	.90117	.84703	.79891
34	2.02482	1.58318	1.36878	1.22590	1.11855	1.03256	.96081	.89925	.84534	.79740
36	2.00000	1.57403	1.36318	1.22185	1.11540	1.02996	.95861	.89734	.84365	.79588
38	1.97652	1.56508	1.35765	1.21785	1.11226	1.02739	.95642	.89544	.84197	.79438
40	1.95424	1.55630	1.35218	1.21388	1.10915	1.02482	.95424	.89355	.84030	.79288
42	1.93305	1.54770	1.34679	1.20995	1.10605	1.02228	.95208	.89166	.83863	.79138
44	1.91285	1.53927	1.34146	1.20606	1.10300	1.01975	.94992	.88980	.83697	.78990
46	1.89355	1.53100	1.33620	1.20220	1.09994	1.01723	.94778	.88792	.83532	.78841
48	1.87506	1.52288	1.33100	1.19837	1.09691	1.01472	.94564	.88606	.83367	.78693
50	1.85733	1.51491	1.32585	1.19458	1.09391	1.01224	.94352	.88421	.83203	.78545
52	1.84030	1.50709	1.32078	1.19082	1.09092	1.00976	.94141	.88236	.83040	.78398
54	1.82391	1.49940	1.31575	1.18710	1.08796	1.00730	.93930	.88053	.82876	.78252
56	1.80812	1.49185	1.31079	1.18340	1.08501	1.00485	.93721	.87870	.82714	.78106
58	1.79288	1.48442	1.30588	1.17973	1.08210	1.00242	.93513	.87688	.82552	.77960
60	1.77815	1.47712	1.30103	1.17610	1.07918	1.00000	.93305	.87506	.82391	.77815
Sec.	10 ^m	11 ^m	12 ^m	13 ^m	14 ^m	15 ^m	16 ^m	17 ^m	18 ^m	19 ^m
0	.77815	.73676	.69897	.66421	.63202	.60206	.57403	.54770	.52298	.49940
2	.77671	.73545	.69777	.66310	.63099	.60110	.57313	.54685	.52208	.49864
4	.77527	.73414	.69657	.66199	.62996	.60014	.57223	.54600	.52127	.49788
6	.77383	.73283	.69537	.66088	.62893	.59918	.57133	.54516	.52047	.49712
8	.77240	.73153	.69417	.65978	.62791	.59822	.57043	.54431	.51967	.49636
10	.77097	.73023	.69298	.65868	.62688	.59726	.56953	.54347	.51888	.49561
12	.76955	.72893	.69179	.65758	.62586	.59631	.56864	.54262	.51808	.49485
14	.76814	.72764	.69061	.65648	.62485	.59536	.56774	.54178	.51729	.49410
16	.76672	.72636	.68943	.65539	.62383	.59441	.56685	.54094	.51649	.49335
18	.76532	.72507	.68825	.65430	.62282	.59346	.56596	.54011	.51570	.49260
20	.76391	.72379	.68707	.65321	.62181	.59252	.56508	.53927	.51491	.49185
22	.76251	.72252	.68590	.65213	.62080	.59157	.56419	.53844	.51412	.49110
24	.76112	.72125	.68473	.65105	.61979	.59063	.56331	.53760	.51333	.49035
26	.75973	.71998	.68356	.64997	.61879	.58969	.56243	.53677	.51255	.48961
28	.75834	.71872	.68240	.64889	.61778	.58876	.56155	.53594	.51176	.48886
30	.75696	.71745	.68124	.64782	.61678	.58782	.56067	.53511	.51098	.48812
32	.75559	.71620	.68009	.64675	.61579	.58689	.55979	.53429	.51020	.48738
34	.75421	.71494	.67893	.64568	.61479	.58596	.55892	.53346	.50942	.48662
36	.75285	.71369	.67778	.64461	.61380	.58503	.55804	.53264	.50864	.48590
38	.75148	.71245	.67663	.64355	.61281	.58410	.55717	.53182	.50786	.48516
40	.75012	.71121	.67549	.64249	.61182	.58318	.55630	.53100	.50709	.48442
42	.74877	.70997	.67435	.64143	.61084	.58225	.55544	.53018	.50631	.48369
44	.74742	.70873	.67321	.64038	.60985	.58133	.55457	.52936	.50554	.48295
46	.74607	.70750	.67207	.63932	.60887	.58041	.55371	.52855	.50477	.48222
48	.74473	.70627	.67094	.63827	.60789	.57950	.55284	.52773	.50399	.48149
50	.74339	.70505	.66981	.63723	.60691	.57858	.55198	.52692	.50323	.48076
52	.74206	.70382	.66869	.63618	.60594	.57767	.55112	.52611	.50246	.48003
54	.74073	.70261	.66756	.63514	.60497	.57676	.55027	.52530	.50169	.47930
56	.73940	.70139	.66644	.63410	.60400	.57585	.54941	.52449	.50093	.47857
58	.73808	.70018	.66532	.63306	.60303	.57494	.54856	.52368	.50016	.47785
60	.73676	.69897	.66421	.63202	.60206	.57403	.54770	.52288	.49940	.47712

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LOGISTIC LOGARITHMS.

Sec.	20m	21m	22m	23m	24m	25m	26m	27m	28m	29m
0	.47712	.45593	.43573	.41642	.39794	.38021	.36318	.34679	.33099	.31575
2	.47640	.45524	.43507	.41580	.39734	.37963	.36262	.34625	.33048	.31526
4	.47568	.45456	.43442	.41517	.39674	.37906	.36207	.34572	.32996	.31476
6	.47496	.45387	.43376	.41454	.39614	.37848	.36151	.34518	.32945	.31426
8	.47424	.45318	.43311	.41391	.39554	.37790	.36096	.34465	.32893	.31376
10	.47352	.45250	.43245	.41329	.39494	.37733	.36040	.34412	.32842	.31327
12	.47280	.45182	.43180	.41266	.39434	.37675	.35985	.34358	.32790	.31277
14	.47209	.45113	.43115	.41204	.39374	.37618	.35930	.34305	.32739	.31227
16	.47137	.45045	.43050	.41142	.39314	.37560	.35875	.34252	.32688	.31178
18	.47066	.44977	.42985	.41080	.39255	.37503	.35820	.34199	.32637	.31126
20	.46994	.44909	.42920	.41018	.39195	.37446	.35765	.34146	.32585	.31079
22	.46923	.44842	.42855	.40956	.39136	.37389	.35710	.34093	.32534	.31030
24	.46852	.44774	.42790	.40894	.39076	.37332	.35655	.34040	.32483	.30981
26	.46781	.44706	.42726	.40832	.39017	.37275	.35600	.33987	.32432	.30931
28	.46711	.44639	.42661	.40770	.38958	.37218	.35545	.33935	.32382	.30882
30	.46640	.44571	.42597	.40708	.38899	.37161	.35491	.33882	.32331	.30833
32	.46569	.44504	.42533	.40647	.38840	.37104	.35436	.33829	.32280	.30784
34	.46499	.44437	.42469	.40585	.38781	.37048	.35382	.33777	.32229	.30735
36	.46429	.44370	.42404	.40524	.38722	.36991	.35327	.33724	.32179	.30686
38	.46358	.44303	.42340	.40463	.38663	.36935	.35273	.33672	.32128	.30637
40	.46288	.44236	.42276	.40402	.38604	.36878	.35218	.33620	.32078	.30588
42	.46218	.44169	.42213	.40340	.38546	.36822	.35164	.33567	.32027	.30540
44	.46148	.44103	.42149	.40279	.38487	.36766	.35110	.33515	.31977	.30491
46	.46079	.44036	.42085	.40218	.38428	.36709	.35056	.33463	.31926	.30442
48	.46009	.43970	.42022	.40158	.38370	.36653	.35002	.33411	.31876	.30394
50	.45939	.43903	.41958	.40097	.38312	.36597	.34948	.33359	.31826	.30345
52	.45870	.43837	.41895	.40036	.38253	.36541	.34894	.33307	.31776	.30297
54	.45801	.43771	.41832	.39975	.38195	.36485	.34840	.33255	.31725	.30248
56	.45731	.43705	.41769	.39915	.38137	.36429	.34786	.33203	.31675	.30200
58	.45662	.43639	.41705	.39854	.38079	.36374	.34733	.33151	.31625	.30151
60	.45593	.43573	.41642	.39794	.38021	.36318	.34679	.33099	.31575	.30103
Sec.	30m	31m	32m	33m	34m	35m	36m	37m	38m	39m
0	.30103	.28679	.27300	.25964	.24667	.23408	.22185	.20995	.19837	.18709
2	.30055	.28632	.27255	.25920	.24625	.23367	.22145	.20956	.19799	.18672
4	.30007	.28586	.27210	.25876	.24582	.23326	.22105	.20917	.19761	.18635
6	.29959	.28539	.27165	.25832	.24540	.23285	.22065	.20878	.19723	.18598
8	.29911	.28493	.27120	.25789	.24497	.23243	.22024	.20839	.19685	.18561
10	.29863	.28446	.27075	.25745	.24455	.23202	.21984	.20800	.19647	.18524
12	.29815	.28400	.27030	.25701	.24413	.23161	.21944	.20761	.19609	.18487
14	.29767	.28353	.26985	.25658	.24370	.23120	.21904	.20722	.19571	.18450
16	.29719	.28307	.26940	.25614	.24328	.23079	.21864	.20683	.19533	.18413
18	.29671	.28261	.26895	.25571	.24286	.23038	.21825	.20644	.19495	.18376
20	.29623	.28215	.26850	.25527	.24244	.22997	.21785	.20606	.19458	.18339
22	.29576	.28168	.26805	.25484	.24202	.22956	.21745	.20567	.19420	.18302
24	.29528	.28122	.26761	.25441	.24159	.22915	.21705	.20528	.19382	.18266
26	.29480	.28076	.26716	.25397	.24117	.22874	.21665	.20489	.19344	.18229
28	.29433	.28030	.26671	.25354	.24075	.22833	.21626	.20451	.19307	.18192
30	.29385	.27984	.26627	.25311	.24033	.22792	.21586	.20412	.19269	.18156
32	.29338	.27938	.26582	.25268	.23991	.22752	.21546	.20374	.19232	.18119
34	.29290	.27892	.26538	.25224	.23949	.22711	.21507	.20335	.19194	.18082
36	.29243	.27847	.26493	.25181	.23908	.22670	.21467	.20297	.19157	.18046
38	.29196	.27801	.26449	.25138	.23866	.22630	.21428	.20258	.19119	.18009
40	.29149	.27755	.26405	.25095	.23824	.22589	.21388	.20220	.19082	.17973
42	.29101	.27709	.26360	.25052	.23782	.22548	.21349	.20181	.19044	.17936
44	.29054	.27664	.26316	.25009	.23741	.22508	.21309	.20143	.19007	.17900
46	.29007	.27618	.26272	.24966	.23699	.22467	.21270	.20104	.18969	.17863
48	.28960	.27573	.26228	.24924	.23657	.22427	.21230	.20066	.18932	.17827
50	.28913	.27527	.26184	.24881	.23616	.22387	.21191	.20028	.18895	.17791
52	.28866	.27482	.26140	.24838	.23574	.22346	.21152	.19990	.18858	.17754
54	.28819	.27436	.26096	.24795	.23533	.22306	.21113	.19951	.18820	.17718
56	.28773	.27391	.26052	.24753	.23491	.22265	.21073	.19913	.18783	.17682
58	.28726	.27346	.26008	.24710	.23450	.22225	.21034	.19875	.18746	.17645
60	.28679	.27300	.25964	.24667	.23408	.22185	.20995	.19837	.18709	.17609

LOGISTIC LOGARITHMS.

Sec.	40 ^m	41 ^m	42 ^m	43 ^m	44 ^m	45 ^m	46 ^m	47 ^m	48 ^m	49 ^m
0	.17609	.16537	.15490	.14468	.13470	.12494	.11539	.10605	.09691	.08796
2	.17573	.16502	.15456	.14435	.13437	.12462	.11508	.10575	.09661	.08766
4	.17537	.16466	.15421	.14401	.13404	.12430	.11477	.10544	.09631	.08737
6	.17501	.16431	.15387	.14368	.13371	.12398	.11445	.10513	.09601	.08707
8	.17465	.16396	.15353	.14334	.13339	.12366	.11414	.10482	.09571	.08678
10	.17429	.16361	.15318	.14300	.13306	.12333	.11382	.10452	.09541	.08648
12	.17393	.16326	.15284	.14267	.13273	.12301	.11351	.10421	.09511	.08619
14	.17357	.16290	.15250	.14233	.13240	.12269	.11320	.10390	.09481	.08589
16	.17321	.16253	.15215	.14200	.13208	.12237	.11288	.10360	.09451	.08560
18	.17286	.16220	.15181	.14166	.13175	.12205	.11257	.10329	.09421	.08531
20	.17249	.16185	.15147	.14133	.13142	.12173	.11226	.10299	.09391	.08501
22	.17213	.16150	.15113	.14100	.13110	.12142	.11195	.10268	.09361	.08472
24	.17177	.16115	.15079	.14066	.13077	.12110	.11163	.10237	.09331	.08443
26	.17141	.16080	.15045	.14033	.13044	.12078	.11132	.10207	.09301	.08413
28	.17106	.16045	.15010	.14000	.13012	.12046	.11101	.10176	.09271	.08384
30	.17070	.16010	.14976	.13966	.12979	.12014	.11070	.10146	.09241	.08355
32	.17034	.15976	.14942	.13933	.12947	.11982	.11039	.10115	.09211	.08325
34	.16998	.15941	.14908	.13900	.12914	.11951	.11008	.10085	.09181	.08296
36	.16963	.15906	.14874	.13867	.12882	.11919	.10977	.10055	.09152	.08267
38	.16927	.15871	.14840	.13833	.12849	.11887	.10946	.10024	.09122	.08238
40	.16891	.15836	.14806	.13800	.12817	.11855	.10915	.09994	.09092	.08209
42	.16856	.15802	.14773	.13767	.12784	.11824	.10884	.09963	.09062	.08180
44	.16820	.15767	.14739	.13734	.12752	.11792	.10853	.09933	.09033	.08150
46	.16785	.15732	.14705	.13701	.12720	.11760	.10822	.09903	.09003	.08121
48	.16749	.15698	.14671	.13668	.12687	.11729	.10791	.09872	.08973	.08092
50	.16714	.15663	.14637	.13635	.12655	.11697	.10760	.09842	.08944	.08063
52	.16678	.15628	.14603	.13602	.12623	.11666	.10729	.09812	.08914	.08034
54	.16643	.15594	.14570	.13569	.12591	.11634	.10698	.09782	.08884	.08005
56	.16608	.15559	.14536	.13536	.12558	.11602	.10667	.09751	.08855	.07976
58	.16572	.15525	.14502	.13503	.12526	.11571	.10636	.09721	.08825	.07947
60	.16537	.15490	.14468	.13470	.12494	.11539	.10605	.09691	.08796	.07918
Sec.	50 ^m	51 ^m	52 ^m	53 ^m	54 ^m	55 ^m	56 ^m	57 ^m	58 ^m	59 ^m
0	.07918	.07058	.06215	.05388	.04576	.03779	.02996	.02228	.01472	.00730
2	.07889	.07030	.06187	.05360	.04549	.03753	.02971	.02202	.01447	.00706
4	.07860	.07002	.06159	.05333	.04522	.03726	.02945	.02177	.01423	.00681
6	.07831	.06973	.06131	.05306	.04496	.03700	.02919	.02152	.01398	.00657
8	.07803	.06945	.06104	.05279	.04469	.03674	.02893	.02126	.01373	.00632
10	.07774	.06917	.06076	.05251	.04442	.03648	.02867	.02101	.01348	.00608
12	.07745	.06888	.06048	.05224	.04415	.03621	.02842	.02076	.01323	.00583
14	.07716	.06860	.06020	.05197	.04389	.03595	.02816	.02050	.01298	.00559
16	.07687	.06832	.05993	.05170	.04362	.03569	.02790	.02025	.01273	.00534
18	.07658	.06804	.05965	.05143	.04335	.03543	.02764	.02000	.01248	.00510
20	.07630	.06775	.05937	.05115	.04309	.03517	.02739	.01975	.01224	.00485
22	.07601	.06747	.05910	.05088	.04282	.03490	.02713	.01949	.01199	.00461
24	.07572	.06719	.05882	.05061	.04255	.03464	.02687	.01924	.01174	.00437
26	.07543	.06691	.05855	.05034	.04229	.03438	.02662	.01899	.01149	.00412
28	.07515	.06663	.05827	.05007	.04202	.03412	.02636	.01874	.01124	.00388
30	.07486	.06635	.05799	.04980	.04176	.03386	.02610	.01848	.01100	.00364
32	.07457	.06606	.05772	.04953	.04150	.03360	.02585	.01823	.01075	.00339
34	.07429	.06578	.05744	.04926	.04123	.03334	.02559	.01798	.01050	.00315
36	.07400	.06550	.05717	.04899	.04096	.03308	.02534	.01773	.01025	.00291
38	.07372	.06522	.05689	.04872	.04069	.03282	.02508	.01748	.01001	.00266
40	.07343	.06494	.05662	.04845	.04043	.03256	.02482	.01723	.00976	.00242
42	.07314	.06466	.05634	.04818	.04017	.03230	.02457	.01698	.00951	.00218
44	.07286	.06438	.05607	.04791	.03990	.03204	.02431	.01673	.00927	.00194
46	.07257	.06410	.05579	.04764	.03964	.03178	.02406	.01648	.00902	.00169
48	.07229	.06382	.05552	.04737	.03937	.03152	.02380	.01622	.00878	.00145
50	.07200	.06354	.05524	.04710	.03911	.03126	.02355	.01597	.00853	.00121
52	.07172	.06326	.05497	.04683	.03884	.03100	.02329	.01572	.00828	.00097
54	.07143	.06300	.05470	.04656	.03858	.03074	.02304	.01547	.00804	.00073
56	.07115	.06271	.05442	.04630	.03832	.03048	.02279	.01522	.00779	.00048
58	.07087	.06243	.05415	.04603	.03805	.03022	.02253	.01497	.00755	.00024
60	.07058	.06215	.05388	.04576	.03779	.02996	.02228	.01472	.00730	.00000

Greenwich Date Logarithm for the Moon. (p.)

Min.	0 ^h	1 ^h	2 ^h	3 ^h	4 ^h	5 ^h	6 ^h	7 ^h	8 ^h	9 ^h	10 ^h	11 ^h	Min.
0		1.07918	.77815	.60206	.47712	.38021	.30103	.23408	.17609	.12494	.07918	.03779	0
1	2.85733	1.07200	.77455	.59966	.47532	.37877	.29983	.23305	.17519	.12414	.07846	.03713	1
2	2.55630	1.06494	.77097	.59726	.47352	.37733	.29863	.23202	.17429	.12333	.07774	.03648	2
3	2.38021	1.05799	.76743	.59488	.47173	.37589	.29743	.23099	.17339	.12253	.07702	.03582	3
4	2.25527	1.05115	.76391	.59252	.46994	.37446	.29623	.22997	.17249	.12173	.07630	.03517	4
5	2.15836	1.04442	.76042	.59016	.46817	.37303	.29504	.22894	.17159	.12094	.07558	.03451	5
6	2.07918	1.03779	.75696	.58782	.46640	.37161	.29385	.22792	.17070	.12014	.07486	.03386	6
7	2.01224	1.03126	.75353	.58549	.46464	.37020	.29267	.22691	.16980	.11935	.07415	.03321	7
8	1.95424	1.02482	.75012	.58318	.46288	.36878	.29149	.22589	.16891	.11855	.07343	.03256	8
9	1.90309	1.01848	.74674	.58087	.46113	.36738	.29031	.22488	.16802	.11776	.07272	.03191	9
10	1.85733	1.01224	.74339	.57858	.45939	.36597	.28913	.22387	.16714	.11697	.07200	.03126	10
11	1.81594	1.00608	.74006	.57630	.45766	.36457	.28796	.22286	.16625	.11618	.07129	.03061	11
12	1.77815	1.00000	.73676	.57403	.45593	.36318	.28679	.22185	.16537	.11539	.07058	.02996	12
13	1.74339	.99401	.73348	.57178	.45421	.36179	.28562	.22085	.16449	.11461	.06987	.02932	13
14	1.71121	.98810	.73023	.56953	.45250	.36040	.28446	.21984	.16361	.11382	.06917	.02867	14
15	1.68124	.98227	.72700	.56730	.45079	.35902	.28330	.21884	.16273	.11304	.06846	.02803	15
16	1.65321	.97652	.72379	.56508	.44909	.35765	.28215	.21785	.16185	.11226	.06775	.02739	16
17	1.62688	.97084	.72061	.56287	.44740	.35627	.28099	.21685	.16098	.11148	.06705	.02675	17
18	1.60206	.96524	.71745	.56067	.44571	.35491	.27984	.21586	.16010	.11070	.06635	.02610	18
19	1.57858	.95971	.71432	.55848	.44403	.35354	.27869	.21487	.15923	.10992	.06564	.02546	19
20	1.55630	.95424	.71121	.55630	.44236	.35218	.27755	.21388	.15836	.10915	.06494	.02482	20
21	1.53511	.94885	.70811	.55414	.44069	.35083	.27641	.21290	.15750	.10837	.06424	.02419	21
22	1.51491	.94352	.70505	.55198	.43903	.34948	.27527	.21191	.15663	.10760	.06354	.02355	22
23	1.49561	.93826	.70200	.54984	.43738	.34813	.27413	.21093	.15577	.10683	.06285	.02291	23
24	1.47712	.93305	.69897	.54770	.43573	.34679	.27300	.20995	.15490	.10606	.06215	.02228	24
25	1.45939	.92791	.69597	.54558	.43409	.34545	.27187	.20897	.15404	.10529	.06145	.02164	25
26	1.44236	.92284	.69298	.54347	.43245	.34412	.27075	.20800	.15318	.10452	.06076	.02101	26
27	1.42597	.91781	.69002	.54136	.43082	.34279	.26962	.20703	.15233	.10375	.06007	.02038	27
28	1.41018	.91285	.68707	.53927	.42920	.34146	.26850	.20606	.15147	.10299	.05937	.01975	28
29	1.39494	.90794	.68415	.53719	.42758	.34014	.26738	.20509	.15062	.10222	.05868	.01911	29
30	1.38021	.90309	.68124	.53511	.42597	.33882	.26627	.20412	.14976	.10146	.05799	.01848	30
31	1.36597	.89829	.67836	.53305	.42436	.33751	.26516	.20316	.14891	.10070	.05730	.01786	31
32	1.35218	.89355	.67549	.53100	.42276	.33620	.26405	.20220	.14806	.09994	.05662	.01723	32
33	1.33882	.88885	.67264	.52895	.42117	.33489	.26294	.20124	.14722	.09918	.05593	.01660	33
34	1.32585	.88421	.66981	.52692	.41958	.33359	.26184	.20028	.14637	.09842	.05524	.01597	34
35	1.31327	.87961	.66700	.52490	.41800	.33229	.26074	.19932	.14553	.09767	.05456	.01535	35
36	1.30103	.87506	.66421	.52288	.41642	.33099	.25964	.19837	.14468	.09691	.05388	.01472	36
37	1.28913	.87056	.66143	.52087	.41485	.32970	.25854	.19742	.14384	.09616	.05319	.01410	37
38	1.27755	.86611	.65868	.51888	.41329	.32842	.25745	.19647	.14300	.09541	.05251	.01348	38
39	1.26627	.86170	.65594	.51689	.41173	.32713	.25636	.19552	.14217	.09466	.05183	.01286	39
40	1.25527	.85733	.65321	.51491	.41018	.32585	.25527	.19458	.14133	.09391	.05115	.01224	40
41	1.24455	.85301	.65051	.51294	.40863	.32458	.25419	.19363	.14050	.09316	.05048	.01162	41
42	1.23408	.84873	.64782	.51098	.40708	.32331	.25311	.19269	.13966	.09241	.04980	.01100	42
43	1.22387	.84451	.64515	.50903	.40555	.32204	.25203	.19175	.13883	.09167	.04912	.01038	43
44	1.21388	.84030	.64249	.50709	.40402	.32078	.25095	.19082	.13800	.09092	.04845	.00976	44
45	1.20412	.83614	.63985	.50515	.40249	.31951	.24988	.18988	.13717	.09018	.04777	.00914	45
46	1.19458	.83203	.63723	.50323	.40097	.31826	.24881	.18895	.13635	.08944	.04710	.00853	46
47	1.18524	.82795	.63462	.50131	.39945	.31700	.24774	.18802	.13552	.08870	.04643	.00791	47
48	1.17609	.82391	.63202	.49940	.39794	.31575	.24667	.18709	.13470	.08796	.04576	.00730	48
49	1.16714	.81991	.62945	.49750	.39644	.31451	.24561	.18616	.13388	.08722	.04509	.00669	49
50	1.15836	.81594	.62688	.49561	.39494	.31327	.24455	.18524	.13306	.08648	.04442	.00608	50
51	1.14976	.81201	.62434	.49372	.39344	.31203	.24349	.18431	.13224	.08575	.04375	.00546	51
52	1.14133	.80812	.62181	.49185	.39195	.31079	.24244	.18339	.13142	.08501	.04309	.00485	52
53	1.13306	.80426	.61929	.48998	.39047	.30956	.24138	.18247	.13061	.08428	.04242	.00424	53
54	1.12494	.80043	.61678	.48812	.38899	.30833	.24033	.18156	.12979	.08355	.04176	.00364	54
55	1.11697	.79664	.61430	.48627	.38751	.30711	.23929	.18064	.12898	.08282	.04109	.00303	55
56	1.10915	.79288	.61182	.48442	.38604	.30588	.23824	.17973	.12817	.08209	.04043	.00242	56
57	1.10146	.78915	.60936	.48259	.38458	.30467	.23720	.17882	.12736	.08136	.03977	.00181	57
58	1.09391	.78545	.60691	.48076	.38312	.30345	.23616	.17791	.12655	.08063	.03911	.00121	58
59	1.08648	.78179	.60448	.47894	.38166	.30224	.23512	.17700	.12574	.07991	.03845	.00060	59

Greenwich Date Logarithm for the Sun. (q.)

Min.	0 ^h	1 ^h	2 ^h	3 ^h	4 ^h	5 ^h	6 ^h	7 ^h	8 ^h	9 ^h	10 ^h	11 ^h	Min
0		1.38021	1.07918	90309	.77815	.68124	.60206	.53511	.47712	.42597	.38021	.33882	0
1	3.15836	1.37303	1.07558	90069	.77635	.67980	.60086	.53408	.47622	.42517	.37949	.33816	1
2	2.85733	1.36597	1.07200	89829	.77455	.67836	.59966	.53305	.47532	.42436	.37877	.33751	2
3	2.68124	1.35902	1.06846	89591	.77276	.67692	.59846	.53202	.47442	.42356	.37805	.33685	3
4	2.55630	1.35218	1.06494	89355	.77097	.67549	.59726	.53090	.47352	.42276	.37733	.33620	4
5	2.45939	1.34545	1.06145	89119	.76920	.67406	.59607	.52997	.47262	.42197	.37661	.33554	5
6	2.38021	1.33882	1.05799	88885	.76743	.67264	.59488	.52895	.47173	.42117	.37589	.33489	6
7	2.31327	1.33229	1.05456	88652	.76567	.67123	.59370	.52794	.47083	.42038	.37518	.33424	7
8	2.25527	1.32585	1.05115	88421	.76391	.66981	.59252	.52692	.46994	.41958	.37446	.33359	8
9	2.20412	1.31951	1.04777	88190	.76216	.66841	.59134	.52591	.46905	.41879	.37375	.33294	9
10	2.15836	1.31327	1.04442	87961	.76042	.66700	.59016	.52490	.46817	.41800	.37303	.33229	10
11	2.11697	1.30711	1.04109	87733	.75869	.66560	.58899	.52389	.46728	.41721	.37232	.33164	11
12	2.07918	1.30103	1.03779	87506	.75696	.66421	.58782	.52288	.46640	.41642	.37161	.33099	12
13	2.04442	1.29504	1.03451	87281	.75524	.66282	.58665	.52188	.46552	.41564	.37090	.33035	13
14	2.01224	1.28913	1.03126	87056	.75353	.66143	.58549	.52087	.46464	.41485	.37020	.32970	14
15	1.98227	1.28330	1.02803	86833	.75182	.66005	.58433	.51987	.46376	.41407	.36949	.32906	15
16	1.95424	1.27755	1.02482	86611	.75012	.65868	.58318	.51888	.46288	.41329	.36878	.32842	16
17	1.92791	1.27187	1.02164	86390	.74843	.65730	.58202	.51788	.46201	.41251	.36808	.32778	17
18	1.90309	1.26627	1.01848	86170	.74674	.65594	.58087	.51689	.46113	.41173	.36738	.32713	18
19	1.87961	1.26074	1.01535	85951	.74506	.65457	.57972	.51590	.46026	.41095	.36667	.32649	19
20	1.85733	1.25527	1.01224	85733	.74339	.65321	.57858	.51491	.45939	.41018	.36597	.32585	20
21	1.83614	1.24988	1.00914	85517	.74172	.65186	.57744	.51393	.45853	.40940	.36527	.32522	21
22	1.81594	1.24455	1.00608	85301	.74006	.65051	.57630	.51294	.45766	.40863	.36457	.32458	22
23	1.79664	1.23929	1.00303	85087	.73841	.64916	.57516	.51196	.45680	.40786	.36388	.32394	23
24	1.77815	1.23408	1.00000	84873	.73676	.64782	.57403	.51098	.45593	.40709	.36318	.32331	24
25	1.76042	1.22894	.99700	84661	.73512	.64648	.57290	.51000	.45507	.40632	.36248	.32267	25
26	1.74339	1.22387	.99401	84450	.73348	.64515	.57178	.50903	.45421	.40555	.36179	.32204	26
27	1.72700	1.21884	.99105	84239	.73185	.64382	.57065	.50806	.45336	.40478	.36110	.32141	27
28	1.71121	1.21388	.98810	84030	.73023	.64249	.56953	.50709	.45250	.40402	.36040	.32078	28
29	1.69597	1.20897	.98518	83822	.72861	.64117	.56841	.50612	.45165	.40325	.35971	.32014	29
30	1.68124	1.20412	.98227	83614	.72700	.63985	.56730	.50515	.45079	.40249	.35902	.31951	30
31	1.66700	1.19932	.97939	83408	.72539	.63854	.56619	.50419	.44994	.40173	.35833	.31889	31
32	1.65321	1.19458	.97652	83203	.72379	.63723	.56508	.50323	.44909	.40097	.35765	.31826	32
33	1.63985	1.18988	.97367	82998	.72220	.63592	.56397	.50227	.44825	.40021	.35696	.31763	33
34	1.62688	1.18524	.97084	82795	.72061	.63462	.56287	.50131	.44740	.39945	.35627	.31700	34
35	1.61430	1.18064	.96803	82593	.71903	.63332	.56177	.50035	.44656	.39870	.35559	.31638	35
36	1.60206	1.17609	.96524	82391	.71745	.63202	.56067	.49940	.44571	.39794	.35491	.31575	36
37	1.59016	1.17159	.96246	82190	.71588	.63073	.55957	.49845	.44487	.39719	.35422	.31513	37
38	1.57858	1.16714	.95971	81991	.71432	.62945	.55848	.49750	.44403	.39644	.35354	.31451	38
39	1.56730	1.16273	.95697	81792	.71276	.62816	.55739	.49655	.44320	.39569	.35286	.31389	39
40	1.55630	1.15836	.95424	81594	.71121	.62688	.55630	.49561	.44236	.39494	.35218	.31327	40
41	1.54558	1.15404	.95154	81397	.70966	.62561	.55522	.49466	.44153	.39419	.35151	.31265	41
42	1.53511	1.14976	.94885	81201	.70811	.62434	.55414	.49372	.44069	.39344	.35083	.31203	42
43	1.52490	1.14554	.94618	81006	.70658	.62307	.55306	.49278	.43986	.39270	.35015	.31141	43
44	1.51491	1.14133	.94352	80812	.70505	.62181	.55198	.49185	.43903	.39195	.34948	.31079	44
45	1.50515	1.13717	.94088	80618	.70352	.62054	.55091	.49091	.43820	.39121	.34880	.31017	45
46	1.49561	1.13306	.93826	80426	.70200	.61929	.54984	.48998	.43738	.39047	.34813	.30956	46
47	1.48627	1.12898	.93565	80234	.70048	.61803	.54877	.48905	.43655	.38973	.34746	.30894	47
48	1.47712	1.12494	.93305	80043	.69897	.61678	.54770	.48812	.43573	.38899	.34679	.30833	48
49	1.46817	1.12094	.93048	79853	.69747	.61554	.54664	.48719	.43491	.38825	.34612	.30772	49
50	1.45939	1.11697	.92791	79664	.69597	.61430	.54558	.48627	.43409	.38751	.34545	.30711	50
51	1.45079	1.11304	.92537	79475	.69447	.61306	.54452	.48534	.43327	.38678	.34478	.30649	51
52	1.44236	1.10915	.92284	79288	.69298	.61182	.54347	.48442	.43245	.38604	.34412	.30588	52
53	1.43409	1.10529	.92032	79101	.69150	.61059	.54241	.48350	.43164	.38531	.34345	.30527	53
54	1.42597	1.10146	.91781	78915	.69002	.60936	.54136	.48259	.43082	.38458	.34279	.30467	54
55	1.41800	1.09767	.91533	78730	.68854	.60814	.54032	.48167	.43001	.38385	.34212	.30406	55
56	1.41018	1.09391	.91285	78545	.68707	.60691	.53927	.48076	.42920	.38312	.34146	.30345	56
57	1.40249	1.09018	.91039	78362	.68561	.60570	.53823	.47985	.42839	.38239	.34080	.30284	57
58	1.39494	1.08648	.90794	78179	.68415	.60448	.53719	.47894	.42758	.38166	.34014	.30224	58
59	1.38751	1.08282	.90551	77997	.68269	.60327	.53615	.47803	.42677	.38094	.33948	.30163	59

0 ^h or 0 ^o .		PROP. LOGARITHMS. (r.)							0 ^h or 0 ^o .
"	0'	1'	2'	3'	4'	5'	6'	7'	"
0		2.25527	1.95424	1.77815	1.65321	1.55630	1.47712	1.41017	0
1	4.03342	2.24809	1.95064	1.77575	1.65141	1.55486	1.47592	1.40914	1
2	3.73239	2.24103	1.94706	1.77335	1.64961	1.55342	1.47472	1.40811	2
3	3.55630	2.23408	1.94352	1.77097	1.64782	1.55198	1.47352	1.40708	3
4	3.43136	2.22724	1.94000	1.76861	1.64603	1.55055	1.47232	1.40606	4
5	3.33445	2.22051	1.93651	1.76625	1.64426	1.54912	1.47113	1.40503	5
6	3.25527	2.21388	1.93305	1.76391	1.64249	1.54770	1.46994	1.40401	6
7	3.18833	2.20735	1.92962	1.76158	1.64073	1.54629	1.46876	1.40300	7
8	3.13033	2.20091	1.92621	1.75927	1.63897	1.54487	1.46758	1.40198	8
9	3.07918	2.19457	1.92283	1.75696	1.63722	1.54347	1.46640	1.40097	9
10	3.03342	2.18833	1.91948	1.75467	1.63548	1.54206	1.46522	1.39996	10
11	2.99203	2.18217	1.91615	1.75239	1.63375	1.54066	1.46405	1.39895	11
12	2.95424	2.17609	1.91285	1.75012	1.63202	1.53927	1.46288	1.39794	12
13	2.91948	2.17010	1.90957	1.74787	1.63030	1.53788	1.46171	1.39694	13
14	2.88730	2.16419	1.90632	1.74562	1.62859	1.53649	1.46055	1.39593	14
15	2.85733	2.15836	1.90309	1.74339	1.62688	1.53511	1.45939	1.39493	15
16	2.82930	2.15261	1.89988	1.74117	1.62518	1.53374	1.45824	1.39394	16
17	2.80297	2.14693	1.89670	1.73896	1.62349	1.53236	1.45708	1.39294	17
18	2.77815	2.14133	1.89354	1.73676	1.62180	1.53100	1.45593	1.39195	18
19	2.75467	2.13580	1.89041	1.73457	1.62012	1.52963	1.45478	1.39096	19
20	2.73239	2.13033	1.88730	1.73239	1.61845	1.52827	1.45364	1.38997	20
21	2.71120	2.12494	1.88420	1.73023	1.61678	1.52692	1.45250	1.38899	21
22	2.69100	2.11961	1.88114	1.72807	1.61512	1.52557	1.45136	1.38800	22
23	2.67170	2.11435	1.87809	1.72593	1.61347	1.52422	1.45022	1.38702	23
24	2.65321	2.10914	1.87506	1.72379	1.61182	1.52288	1.44909	1.38604	24
25	2.63548	2.10400	1.87206	1.72167	1.61018	1.52154	1.44796	1.38506	25
26	2.61845	2.09893	1.86907	1.71956	1.60854	1.52021	1.44684	1.38409	26
27	2.60206	2.09390	1.86611	1.71745	1.60691	1.51888	1.44571	1.38312	27
28	2.58627	2.08894	1.86346	1.71536	1.60529	1.51755	1.44459	1.38215	28
29	2.57103	2.08403	1.86024	1.71328	1.60367	1.51623	1.44347	1.38118	29
30	2.55630	2.07918	1.85733	1.71120	1.60206	1.51491	1.44236	1.38021	30
31	2.54206	2.07438	1.85445	1.70914	1.60045	1.51360	1.44125	1.37925	31
32	2.52827	2.06964	1.85158	1.70709	1.59885	1.51229	1.44014	1.37829	32
33	2.51491	2.06494	1.84873	1.70504	1.59726	1.51098	1.43903	1.37733	33
34	2.50194	2.06030	1.84590	1.70301	1.59567	1.50968	1.43793	1.37637	34
35	2.48936	2.05570	1.84309	1.70099	1.59409	1.50838	1.43683	1.37541	35
36	2.47712	2.05115	1.84030	1.69897	1.59251	1.50708	1.43573	1.37446	36
37	2.46522	2.04665	1.83752	1.69696	1.59094	1.50579	1.43463	1.37351	37
38	2.45364	2.04220	1.83477	1.69497	1.58938	1.50451	1.43354	1.37256	38
39	2.44236	2.03779	1.83203	1.69298	1.58782	1.50322	1.43245	1.37161	39
40	2.43136	2.03342	1.82930	1.69100	1.58627	1.50194	1.43136	1.37067	40
41	2.42064	2.02910	1.82660	1.68903	1.58472	1.50067	1.43028	1.36972	41
42	2.41017	2.02482	1.82391	1.68707	1.58317	1.49940	1.42920	1.36878	42
43	2.39996	2.02060	1.82124	1.68512	1.58164	1.49813	1.42812	1.36784	43
44	2.38997	2.01639	1.81858	1.68318	1.58011	1.49687	1.42704	1.36691	44
45	2.38021	2.01223	1.81594	1.68124	1.57858	1.49560	1.42597	1.36597	45
46	2.37067	2.00812	1.81332	1.67932	1.57706	1.49435	1.42490	1.36504	46
47	2.36133	2.00404	1.81071	1.67740	1.57554	1.49309	1.42383	1.36411	47
48	2.35218	2.00000	1.80811	1.67549	1.57403	1.49184	1.42276	1.36318	48
49	2.34323	1.99600	1.80554	1.67359	1.57253	1.49060	1.42170	1.36225	49
50	2.33445	1.99203	1.80297	1.67170	1.57103	1.48936	1.42064	1.36133	50
51	2.32585	1.98810	1.80043	1.66981	1.56953	1.48812	1.41958	1.36040	51
52	2.31742	1.98421	1.79790	1.66794	1.56804	1.48688	1.41853	1.35948	52
53	2.30915	1.98035	1.79638	1.66607	1.56656	1.48565	1.41747	1.35856	53
54	2.30103	1.97652	1.79287	1.66421	1.56508	1.48442	1.41642	1.35765	54
55	2.29306	1.97273	1.79039	1.66236	1.56360	1.48320	1.41538	1.35673	55
56	2.28524	1.96897	1.78791	1.66051	1.56213	1.48197	1.41433	1.35582	56
57	2.27755	1.96524	1.78545	1.65868	1.56067	1.48076	1.41329	1.35491	57
58	2.27000	1.96154	1.78300	1.65685	1.55921	1.47954	1.41225	1.35400	58
59	2.26257	1.95788	1.78057	1.65503	1.55775	1.47833	1.41121	1.35309	59

0° or 0'		PROP. LOGARITHMS. (r.)								0° or 0'	
n	8'	9	10'	11'	12	13'	14'	15'	n		
0	1.35218	1.30103	1.25527	1.21388	1.17609	1.14133	1.10914	1.07918	0		
1	1.35128	1.30023	1.25455	1.21322	1.17549	1.14077	1.10863	1.07870	1		
2	1.35038	1.29942	1.25383	1.21257	1.17489	1.14022	1.10811	1.07822	2		
3	1.34948	1.29862	1.25311	1.21191	1.17429	1.13966	1.10760	1.07774	3		
4	1.34858	1.29782	1.25239	1.21126	1.17369	1.13911	1.10708	1.07726	4		
5	1.34768	1.29703	1.25167	1.21060	1.17309	1.13855	1.10657	1.07678	5		
6	1.34679	1.29623	1.25095	1.20995	1.17249	1.13800	1.10605	1.07630	6		
7	1.34589	1.29544	1.25024	1.20930	1.17189	1.13745	1.10554	1.07582	7		
8	1.34500	1.29464	1.24952	1.20865	1.17129	1.13690	1.10503	1.07534	8		
9	1.34411	1.29385	1.24881	1.20800	1.17070	1.13635	1.10452	1.07486	9		
10	1.34323	1.29306	1.24809	1.20735	1.17010	1.13580	1.10406	1.07438	10		
11	1.34234	1.29227	1.24738	1.20670	1.16951	1.13525	1.10349	1.07391	11		
12	1.34146	1.29148	1.24667	1.20605	1.16891	1.13470	1.10298	1.07343	12		
13	1.34058	1.29070	1.24596	1.20541	1.16832	1.13415	1.10247	1.07295	13		
14	1.33970	1.28991	1.24526	1.20476	1.16773	1.13360	1.10197	1.07248	14		
15	1.33882	1.28913	1.24455	1.20412	1.16714	1.13306	1.10146	1.07200	15		
16	1.33794	1.28835	1.24384	1.20348	1.16655	1.13251	1.10095	1.07153	16		
17	1.33707	1.28757	1.24314	1.20284	1.16596	1.13197	1.10044	1.07105	17		
18	1.33619	1.28679	1.24244	1.20219	1.16537	1.13142	1.09994	1.07058	18		
19	1.33532	1.28601	1.24173	1.20155	1.16478	1.13088	1.09943	1.07011	19		
20	1.33445	1.28524	1.24103	1.20091	1.16419	1.13033	1.09893	1.06964	20		
21	1.33359	1.28446	1.24033	1.20028	1.16361	1.12979	1.09842	1.06916	21		
22	1.33272	1.28369	1.23963	1.19964	1.16302	1.12925	1.09792	1.06869	22		
23	1.33186	1.28292	1.23894	1.19900	1.16243	1.12871	1.09741	1.06822	23		
24	1.33099	1.28215	1.23824	1.19837	1.16185	1.12817	1.09691	1.06775	24		
25	1.33013	1.28138	1.23754	1.19773	1.16127	1.12763	1.09641	1.06728	25		
26	1.32927	1.28061	1.23685	1.19710	1.16068	1.12709	1.09591	1.06681	26		
27	1.32842	1.27984	1.23616	1.19647	1.16010	1.12655	1.09540	1.06634	27		
28	1.32756	1.27908	1.23546	1.19584	1.15952	1.12601	1.09490	1.06588	28		
29	1.32671	1.27831	1.23477	1.19520	1.15894	1.12548	1.09440	1.06541	29		
30	1.32585	1.27755	1.23408	1.19457	1.15836	1.12494	1.09390	1.06494	30		
31	1.32500	1.27679	1.23339	1.19395	1.15778	1.12440	1.09341	1.06447	31		
32	1.32415	1.27603	1.23271	1.19332	1.15721	1.12387	1.09291	1.06401	32		
33	1.32331	1.27527	1.23202	1.19269	1.15663	1.12333	1.09241	1.06354	33		
34	1.32246	1.27451	1.23133	1.19206	1.15605	1.12280	1.09191	1.06308	34		
35	1.32162	1.27376	1.23065	1.19144	1.15548	1.12227	1.09142	1.06261	35		
36	1.32077	1.27300	1.22997	1.19081	1.15490	1.12173	1.09092	1.06215	36		
37	1.31993	1.27225	1.22928	1.19019	1.15433	1.12120	1.09042	1.06168	37		
38	1.31909	1.27150	1.22860	1.18957	1.15375	1.12067	1.08993	1.06122	38		
39	1.31826	1.27075	1.22792	1.18895	1.15318	1.12014	1.08943	1.06076	39		
40	1.31742	1.27000	1.22724	1.18833	1.15261	1.11961	1.08894	1.06030	40		
41	1.31659	1.26925	1.22657	1.18771	1.15204	1.11908	1.08845	1.05983	41		
42	1.31575	1.26850	1.22589	1.18709	1.15147	1.11855	1.08796	1.05937	42		
43	1.31492	1.26776	1.22521	1.18647	1.15090	1.11802	1.08746	1.05891	43		
44	1.31409	1.26701	1.22454	1.18585	1.15033	1.11750	1.08697	1.05845	44		
45	1.31326	1.26627	1.22386	1.18523	1.14976	1.11697	1.08648	1.05799	45		
46	1.31244	1.26553	1.22319	1.18462	1.14919	1.11644	1.08599	1.05753	46		
47	1.31161	1.26479	1.22252	1.18400	1.14863	1.11592	1.08550	1.05707	47		
48	1.31079	1.26405	1.22185	1.18339	1.14806	1.11539	1.08501	1.05662	48		
49	1.30997	1.26331	1.22118	1.18278	1.14750	1.11487	1.08452	1.05616	49		
50	1.30915	1.26257	1.22051	1.18217	1.14693	1.11435	1.08403	1.05570	50		
51	1.30833	1.26184	1.21984	1.18155	1.14637	1.11382	1.08355	1.05524	51		
52	1.30751	1.26110	1.21918	1.18094	1.14581	1.11330	1.08306	1.05479	52		
53	1.30670	1.26037	1.21851	1.18033	1.14524	1.11278	1.08257	1.05433	53		
54	1.30588	1.25964	1.21785	1.17973	1.14468	1.11226	1.08209	1.05388	54		
55	1.30507	1.25891	1.21718	1.17912	1.14412	1.11174	1.08160	1.05342	55		
56	1.30426	1.25818	1.21652	1.17851	1.14356	1.11122	1.08112	1.05297	56		
57	1.30345	1.25745	1.21586	1.17790	1.14300	1.11070	1.08063	1.05251	57		
58	1.30264	1.25672	1.21520	1.17730	1.14244	1.11018	1.08015	1.05206	58		
59	1.30183	1.25600	1.21454	1.17669	1.14189	1.10966	1.07966	1.05161	59		

0° or 0'		PROP. LOGARITHMS. (r.)								0 ^h or 0'	
#	16'	17'	18'	19'	20'	21'	22'	23'	24'	#	
0	1.05115	1.02482	1.00000	.97652	.95424	.93305	.91285	.89354	.87506	0	
1	1.05070	1.02440	.99960	.97614	.95388	.93271	.91252	.89323	.87476	1	
2	1.05025	1.02397	.99920	.97576	.95352	.93236	.91219	.89292	.87446	2	
3	1.04980	1.02355	.99880	.97538	.95316	.93202	.91186	.89250	.87416	3	
4	1.04935	1.02312	.99839	.97500	.95280	.93168	.91154	.89229	.87386	4	
5	1.04890	1.02270	.99799	.97462	.95244	.93133	.91121	.89197	.87356	5	
6	1.04845	1.02228	.99759	.97424	.95208	.93099	.91088	.89166	.87326	6	
7	1.04800	1.02185	.99719	.97386	.95172	.93065	.91055	.89135	.87296	7	
8	1.04755	1.02143	.99679	.97348	.95136	.93030	.91023	.89103	.87266	8	
9	1.04710	1.02101	.99640	.97310	.95100	.92996	.90990	.89072	.87236	9	
10	1.04665	1.02059	.99600	.97273	.95064	.92962	.90957	.89041	.87206	10	
11	1.04620	1.02017	.99560	.97235	.95028	.92928	.90925	.89010	.87176	11	
12	1.04576	1.01974	.99520	.97197	.94992	.92894	.90892	.88978	.87146	12	
13	1.04531	1.01932	.99480	.97159	.94956	.92860	.90859	.88947	.87116	13	
14	1.04486	1.01890	.99441	.97122	.94921	.92825	.90827	.88916	.87086	14	
15	1.04442	1.01848	.99401	.97084	.94885	.92791	.90794	.88885	.87056	15	
16	1.04397	1.01806	.99361	.97047	.94849	.92757	.90762	.88854	.87026	16	
17	1.04353	1.01764	.99322	.97009	.94813	.92723	.90729	.88823	.86996	17	
18	1.04308	1.01723	.99282	.96972	.94778	.92689	.90697	.88792	.86967	18	
19	1.04264	1.01681	.99243	.96934	.94742	.92655	.90664	.88761	.86937	19	
20	1.04220	1.01639	.99203	.96897	.94706	.92621	.90632	.88730	.86907	20	
21	1.04175	1.01597	.99164	.96859	.94671	.92587	.90599	.88699	.86877	21	
22	1.04131	1.01556	.99124	.96822	.94635	.92554	.90567	.88668	.86848	22	
23	1.04087	1.01514	.99085	.96784	.94600	.92520	.90535	.88637	.86818	23	
24	1.04043	1.01472	.99045	.96747	.94564	.92486	.90502	.88606	.86788	24	
25	1.03999	1.01431	.99006	.96710	.94529	.92452	.90470	.88575	.86759	25	
26	1.03955	1.01389	.98967	.96673	.94493	.92418	.90438	.88544	.86729	26	
27	1.03911	1.01348	.98928	.96635	.94458	.92385	.90406	.88513	.86699	27	
28	1.03867	1.01306	.98888	.96598	.94423	.92351	.90373	.88482	.86670	28	
29	1.03823	1.01265	.98849	.96561	.94387	.92317	.90341	.88451	.86640	29	
30	1.03779	1.01223	.98810	.96524	.94352	.92283	.90309	.88420	.86611	30	
31	1.03735	1.01182	.98771	.96487	.94317	.92250	.90277	.88390	.86581	31	
32	1.03691	1.01141	.98732	.96450	.94281	.92216	.90245	.88359	.86552	32	
33	1.03647	1.01100	.98693	.96413	.94246	.92183	.90213	.88328	.86522	33	
34	1.03604	1.01058	.98654	.96376	.94211	.92149	.90181	.88297	.86493	34	
35	1.03560	1.01017	.98615	.96339	.94176	.92115	.90148	.88267	.86463	35	
36	1.03516	1.00976	.98576	.96302	.94141	.92082	.90116	.88236	.86434	36	
37	1.03473	1.00935	.98537	.96265	.94105	.92048	.90084	.88205	.86404	37	
38	1.03429	1.00894	.98498	.96228	.94070	.92015	.90052	.88175	.86375	38	
39	1.03386	1.00853	.98459	.96191	.94035	.91981	.90020	.88144	.86346	39	
40	1.03342	1.00812	.98421	.96154	.94000	.91948	.89988	.88114	.86316	40	
41	1.03299	1.00771	.98382	.96117	.93965	.91915	.89957	.88083	.86287	41	
42	1.03256	1.00730	.98343	.96081	.93930	.91881	.89925	.88052	.86258	42	
43	1.03212	1.00689	.98304	.96044	.93895	.91848	.89893	.88022	.86228	43	
44	1.03169	1.00648	.98266	.96007	.93860	.91815	.89861	.87991	.86199	44	
45	1.03126	1.00607	.98227	.95971	.93825	.91781	.89829	.87961	.86170	45	
46	1.03083	1.00567	.98189	.95934	.93791	.91748	.89797	.87930	.86140	46	
47	1.03039	1.00526	.98150	.95897	.93756	.91715	.89766	.87900	.86111	47	
48	1.02996	1.00485	.98111	.95861	.93721	.91682	.89734	.87870	.86082	48	
49	1.02953	1.00445	.98073	.95824	.93686	.91648	.89702	.87839	.86053	49	
50	1.02910	1.00404	.98035	.95788	.93651	.91615	.89670	.87809	.86024	50	
51	1.02867	1.00363	.97996	.95751	.93617	.91582	.89639	.87778	.85995	51	
52	1.02824	1.00323	.97958	.95715	.93582	.91549	.89607	.87748	.85965	52	
53	1.02781	1.00282	.97919	.95678	.93547	.91516	.89575	.87718	.85936	53	
54	1.02739	1.00242	.97881	.95642	.93513	.91483	.89544	.87687	.85907	54	
55	1.02696	1.00202	.97843	.95606	.93478	.91450	.89512	.87657	.85878	55	
56	1.02653	1.00161	.97805	.95569	.93443	.91417	.89481	.87627	.85849	56	
57	1.02610	1.00121	.97766	.95533	.93409	.91384	.89449	.87597	.85820	57	
58	1.02568	1.00080	.97728	.95497	.93374	.91351	.89417	.87566	.85791	58	
59	1.02525	1.00040	.97690	.95460	.93340	.91318	.89386	.87536	.85762	59	

0° or 0'		PROP. LOGARITHMS. (r.)									0° or 0'	
n	25'	26'	27'	28'	29'	30'	31'	32'	33'	n		
0	.85733	.84030	.82391	.80811	.79287	.77815	.76391	.75012	.73676	0		
1	.85704	.84002	.82364	.80786	.79262	.77791	.76368	.74990	.73654	1		
2	.85675	.83974	.82337	.80760	.79238	.77767	.76344	.74967	.73632	2		
3	.85646	.83946	.82311	.80734	.79213	.77743	.76321	.74944	.73610	3		
4	.85618	.83919	.82284	.80708	.79188	.77719	.76298	.74922	.73588	4		
5	.85589	.83891	.82257	.80683	.79163	.77695	.76274	.74899	.73566	5		
6	.85560	.83863	.82230	.80657	.79138	.77671	.76251	.74877	.73544	6		
7	.85531	.83835	.82204	.80631	.79113	.77647	.76228	.74854	.73523	7		
8	.85502	.83808	.82177	.80605	.79088	.77623	.76205	.74832	.73501	8		
9	.85473	.83780	.82150	.80579	.79063	.77599	.76181	.74809	.73479	9		
10	.85445	.83752	.82124	.80554	.79039	.77575	.76158	.74787	.73457	10		
11	.85416	.83725	.82097	.80528	.79014	.77551	.76135	.74764	.73435	11		
12	.85387	.83697	.82070	.80502	.78989	.77527	.76112	.74742	.73413	12		
13	.85358	.83670	.82044	.80477	.78964	.77503	.76089	.74719	.73392	13		
14	.85330	.83642	.82017	.80451	.78939	.77479	.76065	.74697	.73370	14		
15	.85301	.83614	.81991	.80425	.78915	.77455	.76042	.74674	.73348	15		
16	.85272	.83587	.81964	.80400	.78890	.77431	.76019	.74652	.73326	16		
17	.85244	.83559	.81938	.80374	.78865	.77407	.75996	.74629	.73305	17		
18	.85215	.83532	.81911	.80349	.78840	.77383	.75973	.74607	.73283	18		
19	.85187	.83504	.81884	.80323	.78816	.77359	.75950	.74585	.73261	19		
20	.85158	.83477	.81858	.80297	.78791	.77335	.75927	.74562	.73239	20		
21	.85129	.83449	.81832	.80272	.78766	.77311	.75903	.74540	.73218	21		
22	.85101	.83422	.81805	.80246	.78742	.77288	.75880	.74517	.73196	22		
23	.85072	.83394	.81779	.80221	.78717	.77264	.75857	.74495	.73174	23		
24	.85044	.83367	.81752	.80195	.78693	.77240	.75834	.74473	.73153	24		
25	.85015	.83339	.81726	.80170	.78668	.77216	.75811	.74450	.73131	25		
26	.84987	.83312	.81699	.80144	.78643	.77192	.75788	.74428	.73109	26		
27	.84958	.83285	.81673	.80119	.78619	.77169	.75765	.74406	.73088	27		
28	.84930	.83257	.81647	.80094	.78594	.77145	.75742	.74383	.73066	28		
29	.84902	.83230	.81620	.80068	.78570	.77121	.75719	.74361	.73044	29		
30	.84873	.83203	.81594	.80043	.78545	.77097	.75696	.74339	.73023	30		
31	.84845	.83175	.81568	.80017	.78521	.77074	.75673	.74317	.73001	31		
32	.84816	.83148	.81541	.79992	.78496	.77050	.75650	.74294	.72980	32		
33	.84788	.83121	.81515	.79967	.78472	.77026	.75627	.74272	.72958	33		
34	.84760	.83094	.81489	.79941	.78447	.77002	.75604	.74250	.72936	34		
35	.84732	.83066	.81463	.79916	.78423	.76979	.75581	.74228	.72915	35		
36	.84703	.83039	.81436	.79891	.78398	.76955	.75559	.74205	.72893	36		
37	.84675	.83012	.81410	.79865	.78374	.76931	.75536	.74183	.72872	37		
38	.84647	.82985	.81384	.79840	.78349	.76908	.75513	.74161	.72850	38		
39	.84619	.82958	.81358	.79815	.78325	.76884	.75490	.74139	.72829	39		
40	.84590	.82930	.81332	.79790	.78300	.76861	.75467	.74117	.72807	40		
41	.84562	.82903	.81305	.79764	.78276	.76837	.75444	.74095	.72786	41		
42	.84534	.82876	.81279	.79739	.78252	.76813	.75421	.74072	.72764	42		
43	.84506	.82849	.81253	.79714	.78227	.76790	.75398	.74050	.72743	43		
44	.84478	.82822	.81227	.79689	.78203	.76766	.75376	.74028	.72721	44		
45	.84450	.82795	.81201	.79663	.78179	.76743	.75353	.74006	.72700	45		
46	.84421	.82768	.81175	.79638	.78154	.76719	.75330	.73984	.72678	46		
47	.84393	.82741	.81149	.79613	.78130	.76696	.75307	.73962	.72657	47		
48	.84365	.82714	.81123	.79588	.78106	.76672	.75285	.73940	.72636	48		
49	.84337	.82687	.81097	.79563	.78081	.76649	.75262	.73918	.72614	49		
50	.84309	.82660	.81071	.79538	.78057	.76625	.75239	.73896	.72593	50		
51	.84281	.82633	.81045	.79513	.78033	.76602	.75216	.73874	.72571	51		
52	.84253	.82606	.81019	.79488	.78009	.76578	.75194	.73852	.72550	52		
53	.84225	.82579	.80993	.79463	.77984	.76555	.75171	.73830	.72529	53		
54	.84197	.82552	.80967	.79437	.77960	.76531	.75148	.73808	.72507	54		
55	.84169	.82525	.80941	.79412	.77936	.76508	.75126	.73786	.72486	55		
56	.84141	.82498	.80915	.79387	.77912	.76485	.75103	.73764	.72465	56		
57	.84114	.82471	.80889	.79362	.77888	.76461	.75080	.73742	.72443	57		
58	.84086	.82445	.80863	.79337	.77863	.76438	.75058	.73720	.72422	58		
59	.84058	.82418	.80837	.79312	.77839	.76414	.75035	.73698	.72401	59		

Greenwich Date Logarithm for the SUN. (q.)

Min	12 ^h	13 ^h	14 ^h	15 ^h	16 ^h	17 ^h	18 ^h	19 ^h	20 ^h	21 ^h	22 ^h	23 ^h	Min
0	.30103	.26627	.23408	.20412	.17609	.14976	.12494	.10146	.07918	.05799	.03779	.01848	0
1	.30043	.26571	.23357	.20364	.17564	.14934	.12454	.10108	.07882	.05765	.03746	.01817	1
2	.29983	.26516	.23305	.20316	.17519	.14891	.12414	.10070	.07846	.05730	.03713	.01786	2
3	.29923	.26460	.23254	.20268	.17474	.14849	.12374	.10032	.07810	.05696	.03680	.01754	3
4	.29863	.26405	.23202	.20220	.17429	.14806	.12333	.09994	.07774	.05662	.03648	.01723	4
5	.29803	.26349	.23151	.20172	.17384	.14764	.12293	.09956	.07738	.05627	.03615	.01691	5
6	.29743	.26294	.23099	.20124	.17339	.14722	.12253	.09918	.07702	.05593	.03582	.01666	6
7	.29683	.26239	.23048	.20076	.17294	.14679	.12213	.09880	.07666	.05559	.03549	.01629	7
8	.29623	.26184	.22997	.20028	.17249	.14637	.12173	.09842	.07630	.05524	.03517	.01597	8
9	.29564	.26129	.22946	.19980	.17204	.14595	.12134	.09804	.07594	.05490	.03484	.01566	9
10	.29504	.26074	.22894	.19932	.17159	.14553	.12094	.09767	.07558	.05456	.03451	.01535	10
11	.29445	.26019	.22843	.19885	.17114	.14511	.12054	.09729	.07522	.05422	.03419	.01504	11
12	.29385	.25964	.22792	.19837	.17070	.14468	.12014	.09691	.07486	.05388	.03386	.01472	12
13	.29326	.25909	.22741	.19789	.17025	.14426	.11974	.09653	.07450	.05354	.03353	.01441	13
14	.29267	.25854	.22691	.19742	.16980	.14384	.11935	.09616	.07415	.05319	.03321	.01410	14
15	.29208	.25800	.22640	.19694	.16936	.14342	.11895	.09578	.07379	.05285	.03288	.01379	15
16	.29149	.25745	.22589	.19647	.16891	.14300	.11855	.09541	.07343	.05251	.03256	.01348	16
17	.29090	.25691	.22538	.19599	.16847	.14258	.11816	.09503	.07307	.05217	.03223	.01317	17
18	.29031	.25636	.22488	.19552	.16802	.14217	.11776	.09466	.07272	.05183	.03191	.01286	18
19	.28972	.25582	.22437	.19505	.16758	.14175	.11737	.09428	.07236	.05149	.03158	.01255	19
20	.28913	.25527	.22387	.19458	.16714	.14133	.11697	.09391	.07200	.05115	.03126	.01224	20
21	.28855	.25473	.22336	.19410	.16669	.14091	.11658	.09353	.07165	.05081	.03093	.01193	21
22	.28796	.25419	.22286	.19363	.16625	.14050	.11618	.09316	.07129	.05048	.03061	.01162	22
23	.28737	.25365	.22235	.19316	.16581	.14008	.11579	.09278	.07094	.05014	.03029	.01131	23
24	.28679	.25311	.22185	.19269	.16537	.13966	.11539	.09241	.07058	.04980	.02996	.01100	24
25	.28621	.25257	.22135	.19222	.16493	.13925	.11500	.09204	.07023	.04946	.02964	.01069	25
26	.28562	.25203	.22085	.19175	.16449	.13883	.11461	.09167	.06987	.04912	.02932	.01038	26
27	.28504	.25149	.22034	.19128	.16405	.13842	.11422	.09129	.06952	.04879	.02900	.01007	27
28	.28446	.25095	.21984	.19082	.16361	.13800	.11382	.09092	.06917	.04845	.02867	.00976	28
29	.28388	.25042	.21934	.19035	.16317	.13759	.11343	.09055	.06881	.04811	.02835	.00945	29
30	.28330	.24988	.21884	.18988	.16273	.13717	.11304	.09018	.06846	.04777	.02803	.00914	30
31	.28272	.24934	.21835	.18941	.16229	.13676	.11265	.08981	.06811	.04744	.02771	.00884	31
32	.28215	.24881	.21785	.18895	.16185	.13635	.11226	.08944	.06775	.04710	.02739	.00853	32
33	.28157	.24827	.21735	.18848	.16141	.13594	.11187	.08907	.06740	.04677	.02707	.00822	33
34	.28099	.24774	.21685	.18802	.16098	.13552	.11148	.08870	.06705	.04643	.02675	.00791	34
35	.28042	.24721	.21636	.18755	.16054	.13511	.11109	.08833	.06670	.04609	.02642	.00761	35
36	.27984	.24667	.21586	.18709	.16010	.13470	.11070	.08796	.06635	.04576	.02610	.00730	36
37	.27927	.24614	.21536	.18662	.15967	.13429	.11031	.08759	.06599	.04542	.02578	.00699	37
38	.27869	.24561	.21487	.18616	.15923	.13388	.10992	.08722	.06564	.04509	.02546	.00669	38
39	.27812	.24508	.21437	.18570	.15880	.13347	.10953	.08685	.06529	.04475	.02514	.00638	39
40	.27755	.24455	.21388	.18524	.15836	.13306	.10915	.08648	.06494	.04442	.02482	.00608	40
41	.27698	.24402	.21339	.18477	.15793	.13265	.10876	.08611	.06459	.04409	.02451	.00577	41
42	.27641	.24349	.21290	.18431	.15750	.13224	.10837	.08575	.06424	.04375	.02419	.00546	42
43	.27584	.24296	.21240	.18385	.15706	.13183	.10798	.08538	.06389	.04342	.02387	.00516	43
44	.27527	.24244	.21191	.18339	.15663	.13142	.10760	.08501	.06354	.04309	.02355	.00485	44
45	.27470	.24191	.21142	.18293	.15620	.13101	.10721	.08465	.06319	.04275	.02323	.00455	45
46	.27413	.24138	.21093	.18247	.15577	.13061	.10683	.08428	.06285	.04242	.02291	.00424	46
47	.27357	.24086	.21044	.18201	.15533	.13020	.10644	.08391	.06250	.04209	.02260	.00394	47
48	.27300	.24033	.20995	.18156	.15490	.12979	.10605	.08355	.06215	.04176	.02228	.00364	48
49	.27244	.23981	.20946	.18110	.15447	.12939	.10567	.08318	.06180	.04142	.02196	.00333	49
50	.27187	.23929	.20897	.18064	.15404	.12898	.10529	.08282	.06145	.04109	.02164	.00303	50
51	.27131	.23876	.20849	.18018	.15361	.12857	.10490	.08245	.06111	.04076	.02133	.00272	51
52	.27075	.23824	.20800	.17973	.15318	.12817	.10452	.08209	.06076	.04043	.02101	.00242	52
53	.27018	.23772	.20751	.17927	.15275	.12776	.10413	.08172	.06041	.04010	.02069	.00212	53
54	.26962	.23720	.20703	.17882	.15233	.12736	.10375	.08136	.06007	.03977	.02038	.00181	54
55	.26906	.23668	.20654	.17836	.15190	.12696	.10337	.08100	.05972	.03944	.02006	.00151	55
56	.26850	.23616	.20606	.17791	.15147	.12655	.10299	.08063	.05937	.03911	.01975	.00121	56
57	.26794	.23564	.20557	.17745	.15104	.12615	.10260	.08027	.05903	.03878	.01943	.00091	57
58	.26738	.23512	.20509	.17700	.15062	.12574	.10222	.07991	.05868	.03845	.01911	.00060	58
59	.26683	.23460	.20460	.17655	.15019	.12534	.10184	.07954	.05834	.03812	.01880	.00030	59

Prop. Logarithms for Seconds and Tenths of Seconds.

(qq)

"	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
0		5.03342	4.73239	4.55630	4.43136	4.33445	4.25627	4.18833	4.13033	4.07918
1	4.03342	3.99203	3.95424	3.91948	3.88730	3.85733	3.82930	3.80297	3.77815	3.75467
2	3.73239	3.71120	3.69100	3.67170	3.65321	3.63548	3.61845	3.60206	3.58627	3.57103
3	3.55630	3.54206	3.52827	3.51491	3.50194	3.48936	3.47712	3.46522	3.45364	3.44236
4	3.43136	3.42064	3.41017	3.39996	3.38997	3.38021	3.37067	3.36133	3.35218	3.34323
5	3.33445	3.32585	3.31742	3.30915	3.30103	3.29306	3.28524	3.27755	3.27000	3.26257
6	3.25527	3.24809	3.24103	3.23408	3.22724	3.22051	3.21388	3.20735	3.20091	3.19457
7	3.18833	3.18217	3.17609	3.17010	3.16419	3.15836	3.15261	3.14693	3.14133	3.13580
8	3.13033	3.12494	3.11961	3.11435	3.10914	3.10400	3.09893	3.09390	3.08894	3.08403
9	3.07918	3.07438	3.06964	3.06494	3.06030	3.05570	3.05115	3.04665	3.04220	3.03779
10	3.03342	3.02910	3.02482	3.02060	3.01639	3.01223	3.00812	3.00404	3.00000	2.99600
11	2.99203	2.98810	2.98421	2.98035	2.97652	2.97273	2.96897	2.96524	2.96154	2.95788
12	2.95424	2.95064	2.94706	2.94352	2.94000	2.93651	2.93305	2.92962	2.92621	2.92283
13	2.91948	2.91615	2.91285	2.90957	2.90632	2.90309	2.89988	2.89670	2.89354	2.89041
14	2.88730	2.88420	2.88114	2.87809	2.87506	2.87206	2.86907	2.86611	2.86316	2.86024
15	2.85733	2.85445	2.85158	2.84873	2.84590	2.84309	2.84030	2.83752	2.83477	2.83203
16	2.82930	2.82660	2.82391	2.82124	2.81858	2.81594	2.81332	2.81071	2.80811	2.80554
17	2.80297	2.80043	2.79790	2.79538	2.79287	2.79039	2.78791	2.78545	2.78300	2.78057
18	2.77815	2.77575	2.77335	2.77097	2.76861	2.76625	2.76391	2.76158	2.75927	2.75696
19	2.75467	2.75239	2.75012	2.74787	2.74562	2.74339	2.74117	2.73896	2.73676	2.73457
20	2.73239	2.73023	2.72807	2.72593	2.72379	2.72167	2.71956	2.71745	2.71536	2.71328
21	2.71120	2.70914	2.70709	2.70504	2.70301	2.70099	2.69897	2.69696	2.69497	2.69298
22	2.69100	2.68903	2.68707	2.68512	2.68318	2.68124	2.67932	2.67740	2.67549	2.67359
23	2.67170	2.66981	2.66794	2.66607	2.66421	2.66236	2.66051	2.65868	2.65685	2.65502
24	2.65321	2.65141	2.64961	2.64782	2.64603	2.64426	2.64249	2.64073	2.63897	2.63722
25	2.63548	2.63375	2.63202	2.63030	2.62859	2.62688	2.62518	2.62349	2.62180	2.62012
26	2.61845	2.61678	2.61512	2.61347	2.61182	2.61018	2.60854	2.60691	2.60529	2.60367
27	2.60206	2.60045	2.59885	2.59726	2.59567	2.59409	2.59251	2.59094	2.58938	2.58782
28	2.58627	2.58472	2.58317	2.58164	2.58011	2.57858	2.57706	2.57554	2.57403	2.57253
29	2.57103	2.56953	2.56804	2.56656	2.56508	2.56360	2.56213	2.56067	2.55921	2.55775
30	2.55630	2.55486	2.55342	2.55198	2.55055	2.54912	2.54770	2.54629	2.54487	2.54347
31	2.54206	2.54066	2.53927	2.53788	2.53649	2.53511	2.53374	2.53236	2.53100	2.52963
32	2.52827	2.52689	2.52557	2.52422	2.52288	2.52154	2.52021	2.51888	2.51755	2.51623
33	2.51491	2.51360	2.51229	2.51098	2.50968	2.50838	2.50708	2.50579	2.50451	2.50322
34	2.50194	2.50067	2.49940	2.49813	2.49687	2.49560	2.49435	2.49309	2.49184	2.49060
35	2.48936	2.48812	2.48688	2.48565	2.48442	2.48320	2.48197	2.48076	2.47954	2.47833
36	2.47712	2.47592	2.47472	2.47352	2.47232	2.47113	2.46994	2.46876	2.46758	2.46640
37	2.46522	2.46405	2.46288	2.46171	2.46055	2.45939	2.45824	2.45708	2.45593	2.45478
38	2.45364	2.45250	2.45136	2.45022	2.44909	2.44796	2.44684	2.44571	2.44459	2.44347
39	2.44236	2.44125	2.44014	2.43903	2.43793	2.43683	2.43573	2.43463	2.43354	2.43245
40	2.43136	2.43028	2.42920	2.42812	2.42704	2.42597	2.42490	2.42383	2.42276	2.42170
41	2.42064	2.41958	2.41853	2.41747	2.41642	2.41538	2.41433	2.41329	2.41225	2.41121
42	2.41017	2.40914	2.40811	2.40708	2.40606	2.40503	2.40401	2.40300	2.40198	2.40097
43	2.39996	2.39895	2.39794	2.39694	2.39593	2.39493	2.39394	2.39294	2.39195	2.39096
44	2.38997	2.38899	2.38800	2.38702	2.38604	2.38506	2.38409	2.38312	2.38215	2.38118
45	2.38021	2.37925	2.37829	2.37733	2.37637	2.37541	2.37446	2.37351	2.37256	2.37161
46	2.37067	2.36972	2.36878	2.36784	2.36691	2.36597	2.36504	2.36411	2.36318	2.36225
47	2.36133	2.36040	2.35948	2.35856	2.35765	2.35673	2.35582	2.35491	2.35400	2.35309
48	2.35218	2.35128	2.35038	2.34948	2.34858	2.34768	2.34679	2.34589	2.34500	2.34411
49	2.34323	2.34234	2.34146	2.34058	2.33970	2.33882	2.33794	2.33707	2.33619	2.33532
50	2.33445	2.33359	2.33272	2.33186	2.33099	2.33013	2.32927	2.32842	2.32756	2.32671
51	2.32585	2.32500	2.32415	2.32331	2.32246	2.32162	2.32077	2.31993	2.31909	2.31826
52	2.31742	2.31659	2.31575	2.31492	2.31409	2.31326	2.31244	2.31161	2.31079	2.30997
53	2.30915	2.30833	2.30751	2.30670	2.30588	2.30507	2.30426	2.30345	2.30264	2.30183
54	2.30103	2.30023	2.29942	2.29862	2.29782	2.29703	2.29623	2.29544	2.29464	2.29385
55	2.29306	2.29227	2.29148	2.29070	2.28991	2.28913	2.28835	2.28757	2.28679	2.28601
56	2.28524	2.28446	2.28369	2.28292	2.28215	2.28138	2.28061	2.27984	2.27908	2.27831
57	2.27755	2.27679	2.27603	2.27527	2.27451	2.27376	2.27300	2.27225	2.27150	2.27075
58	2.27000	2.26925	2.26850	2.26776	2.26701	2.26627	2.26553	2.26479	2.26405	2.26331
59	2.26257	2.26184	2.26110	2.26037	2.25964	2.25891	2.25818	2.25745	2.25672	2.25600

0° or 0'		PROP. LOGARITHMS. (r.)								0° or 0'	
"	34'	35'	36'	37'	38'	39'	40'	41'	42'	"	
0	.72379	.71120	.69897	.68707	.67549	.66421	.65321	.64249	.63202	0	
1	.72358	.71100	.69877	.68688	.67530	.66402	.65303	.64231	.63185	1	
2	.72337	.71079	.69857	.68668	.67511	.66384	.65285	.64214	.63168	2	
3	.72316	.71058	.69837	.68648	.67492	.66365	.65267	.64196	.63151	3	
4	.72294	.71038	.69817	.68629	.67473	.66347	.65249	.64178	.63133	4	
5	.72273	.71017	.69797	.68609	.67454	.66328	.65231	.64161	.63116	5	
6	.72252	.70997	.69777	.68590	.67435	.66310	.65213	.64143	.63099	6	
7	.72231	.70976	.69756	.68570	.67416	.66291	.65195	.64125	.63082	7	
8	.72209	.70955	.69736	.68551	.67397	.66273	.65177	.64108	.63065	8	
9	.72188	.70935	.69716	.68531	.67378	.66254	.65159	.64090	.63047	9	
10	.72167	.70914	.69696	.68512	.67359	.66236	.65141	.64073	.63030	10	
11	.72146	.70894	.69676	.68492	.67340	.66217	.65123	.64055	.63013	11	
12	.72125	.70873	.69656	.68473	.67321	.66199	.65105	.64038	.62996	12	
13	.72103	.70852	.69636	.68454	.67302	.66180	.65087	.64020	.62979	13	
14	.72082	.70832	.69616	.68434	.67283	.66162	.65069	.64002	.62962	14	
15	.72061	.70811	.69596	.68415	.67264	.66143	.65051	.63985	.62945	15	
16	.72040	.70791	.69576	.68395	.67245	.66125	.65033	.63967	.62927	16	
17	.72019	.70770	.69557	.68376	.67226	.66106	.65015	.63950	.62910	17	
18	.71998	.70750	.69537	.68356	.67207	.66088	.64997	.63932	.62893	18	
19	.71977	.70729	.69517	.68337	.67188	.66070	.64979	.63915	.62876	19	
20	.71956	.70709	.69497	.68318	.67170	.66051	.64961	.63897	.62859	20	
21	.71935	.70688	.69477	.68298	.67151	.66033	.64943	.63880	.62842	21	
22	.71914	.70668	.69457	.68279	.67132	.66014	.64925	.63862	.62825	22	
23	.71892	.70647	.69437	.68259	.67113	.65996	.64907	.63845	.62808	23	
24	.71871	.70627	.69417	.68240	.67094	.65978	.64889	.63827	.62791	24	
25	.71850	.70606	.69397	.68221	.67075	.65959	.64871	.63810	.62774	25	
26	.71829	.70586	.69377	.68201	.67056	.65941	.64853	.63792	.62757	26	
27	.71808	.70566	.69357	.68182	.67038	.65928	.64835	.63775	.62739	27	
28	.71787	.70545	.69338	.68163	.67019	.65904	.64818	.63757	.62722	28	
29	.71766	.70525	.69318	.68143	.67000	.65886	.64800	.63740	.62705	29	
30	.71745	.70504	.69298	.68124	.66981	.65868	.64782	.63722	.62688	30	
31	.71724	.70484	.69278	.68105	.66962	.65849	.64764	.63705	.62671	31	
32	.71703	.70464	.69258	.68086	.66944	.65831	.64746	.63688	.62654	32	
33	.71682	.70443	.69239	.68066	.66925	.65813	.64728	.63670	.62637	33	
34	.71661	.70423	.69219	.68047	.66906	.65794	.64710	.63653	.62620	34	
35	.71641	.70403	.69199	.68028	.66887	.65776	.64692	.63635	.62603	35	
36	.71620	.70382	.69179	.68009	.66869	.65758	.64675	.63618	.62586	36	
37	.71599	.70362	.69159	.67989	.66850	.65739	.64657	.63601	.62569	37	
38	.71578	.70342	.69140	.67970	.66831	.65721	.64639	.63583	.62552	38	
39	.71557	.70321	.69120	.67951	.66812	.65703	.64621	.63566	.62535	39	
40	.71536	.70301	.69100	.67932	.66794	.65685	.64603	.63548	.62518	40	
41	.71515	.70281	.69080	.67912	.66775	.65666	.64586	.63531	.62501	41	
42	.71494	.70260	.69061	.67893	.66756	.65648	.64568	.63514	.62485	42	
43	.71473	.70240	.69041	.67874	.66737	.65630	.64550	.63496	.62468	43	
44	.71453	.70220	.69021	.67855	.66719	.65612	.64532	.63479	.62451	44	
45	.71432	.70200	.69002	.67836	.66700	.65594	.64514	.63462	.62434	45	
46	.71411	.70179	.68982	.67816	.66681	.65575	.64497	.63444	.62417	46	
47	.71390	.70159	.68962	.67797	.66663	.65557	.64479	.63427	.62400	47	
48	.71369	.70139	.68942	.67778	.66644	.65539	.64461	.63410	.62383	48	
49	.71349	.70119	.68923	.67759	.66625	.65521	.64443	.63392	.62366	49	
50	.71328	.70099	.68903	.67740	.66607	.65503	.64426	.63375	.62349	50	
51	.71307	.70078	.68884	.67721	.66588	.65484	.64408	.63358	.62332	51	
52	.71286	.70058	.68864	.67702	.66570	.65466	.64390	.63340	.62315	52	
53	.71265	.70038	.68844	.67682	.66561	.65448	.64373	.63323	.62298	53	
54	.71245	.70018	.68825	.67663	.66532	.65430	.64355	.63306	.62282	54	
55	.71224	.69998	.68805	.67644	.66514	.65412	.64337	.63289	.62265	55	
56	.71203	.69977	.68785	.67625	.66495	.65394	.64320	.63271	.62248	56	
57	.71183	.69957	.68766	.67606	.66477	.65376	.64302	.63254	.62231	57	
58	.71162	.69937	.68746	.67587	.66458	.65357	.64284	.63237	.62214	58	
59	.71141	.69917	.68727	.67568	.66439	.65339	.64267	.63220	.62197	59	

0° or 0'		PROP. LOGARITHMS. (r)								0° or 0'	
"	43'	44'	45'	46'	47'	48'	49'	50'	51'	"	~
0	.62180	.61182	.60206	.59251	.58317	.57403	.56508	.55630	.54770	0	
1	.62164	.61166	.60190	.59236	.58302	.57388	.56493	.55616	.54756	1	
2	.62147	.61149	.60174	.59220	.58287	.57373	.56478	.55601	.54742	2	
3	.62130	.61133	.60158	.59204	.58271	.57358	.56463	.55587	.54728	3	
4	.62113	.61116	.60142	.59189	.58256	.57343	.56449	.55572	.54714	4	
5	.62096	.61100	.60126	.59173	.58241	.57328	.56434	.55558	.54699	5	
6	.62080	.61083	.60110	.59157	.58225	.57313	.56419	.55543	.54685	6	
7	.62063	.61067	.60094	.59141	.58210	.57298	.56404	.55529	.54671	7	
8	.62046	.61051	.60078	.59126	.58194	.57283	.56390	.55515	.54657	8	
9	.62029	.61034	.60061	.59110	.58179	.57268	.56375	.55500	.54643	9	
10	.62012	.61018	.60045	.59094	.58164	.57253	.56360	.55486	.54629	10	
11	.61996	.61001	.60029	.59079	.58148	.57238	.56345	.55471	.54614	11	
12	.61979	.60985	.60013	.59063	.58133	.57223	.56331	.55457	.54600	12	
13	.61962	.60969	.59997	.59047	.58118	.57208	.56316	.55442	.54586	13	
14	.61945	.60952	.59981	.59032	.58102	.57193	.56301	.55428	.54572	14	
15	.61929	.60936	.59965	.59016	.58087	.57178	.56287	.55414	.54558	15	
16	.61912	.60920	.59949	.59000	.58072	.57163	.56272	.55399	.54544	16	
17	.61895	.60903	.59933	.58985	.58056	.57148	.56257	.55385	.54530	17	
18	.61878	.60887	.59917	.58969	.58041	.57133	.56243	.55370	.54516	18	
19	.61862	.60871	.59901	.58953	.58026	.57118	.56228	.55356	.54501	19	
20	.61845	.60854	.59885	.58938	.58011	.57103	.56213	.55342	.54487	20	
21	.61828	.60838	.59870	.58922	.57995	.57088	.56199	.55327	.54473	21	
22	.61812	.60822	.59854	.58907	.57980	.57073	.56184	.55313	.54459	22	
23	.61795	.60805	.59838	.58891	.57965	.57058	.56169	.55299	.54445	23	
24	.61778	.60789	.59822	.58875	.57949	.57043	.56155	.55284	.54431	24	
25	.61762	.60773	.59806	.58860	.57934	.57028	.56140	.55270	.54417	25	
26	.61745	.60756	.59790	.58844	.57919	.57013	.56125	.55255	.54403	26	
27	.61728	.60740	.59774	.58829	.57904	.56998	.56111	.55241	.54389	27	
28	.61712	.60724	.59758	.58813	.57888	.56983	.56096	.55227	.54375	28	
29	.61695	.60708	.59742	.58798	.57873	.56968	.56081	.55212	.54361	29	
30	.61678	.60691	.59726	.58782	.57858	.56953	.56067	.55198	.54347	30	
31	.61662	.60675	.59710	.58766	.57843	.56938	.56052	.55184	.54332	31	
32	.61645	.60659	.59694	.58751	.57827	.56923	.56037	.55169	.54318	32	
33	.61628	.60642	.59678	.58735	.57812	.56908	.56023	.55155	.54304	33	
34	.61612	.60626	.59663	.58720	.57797	.56893	.56008	.55141	.54290	34	
35	.61595	.60610	.59647	.58704	.57782	.56879	.55994	.55127	.54276	35	
36	.61579	.60594	.59631	.58689	.57767	.56864	.55979	.55112	.54262	36	
37	.61562	.60578	.59615	.58673	.57751	.56849	.55964	.55098	.54248	37	
38	.61545	.60561	.59599	.58658	.57736	.56834	.55950	.55084	.54234	38	
39	.61529	.60545	.59583	.58642	.57721	.56819	.55935	.55069	.54220	39	
40	.61512	.60529	.59567	.58627	.57706	.56804	.55921	.55055	.54206	40	
41	.61496	.60513	.59551	.58611	.57691	.56789	.55906	.55041	.54192	41	
42	.61479	.60496	.59536	.58596	.57675	.56774	.55892	.55026	.54178	42	
43	.61463	.60480	.59520	.58580	.57660	.56759	.55877	.55012	.54164	43	
44	.61446	.60464	.59504	.58565	.57645	.56745	.55862	.54998	.54150	44	
45	.61429	.60448	.59488	.58549	.57630	.56730	.55848	.54984	.54136	45	
46	.61413	.60432	.59472	.58534	.57615	.56715	.55833	.54969	.54122	46	
47	.61396	.60416	.59457	.58518	.57600	.56700	.55819	.54955	.54108	47	
48	.61380	.60399	.59441	.58503	.57584	.56685	.55804	.54941	.54094	48	
49	.61363	.60383	.59425	.58487	.57569	.56670	.55790	.54927	.54080	49	
50	.61347	.60367	.59409	.58472	.57554	.56656	.55775	.54912	.54066	50	
51	.61330	.60351	.59393	.58456	.57539	.56641	.55761	.54898	.54052	51	
52	.61314	.60335	.59378	.58441	.57524	.56626	.55746	.54884	.54038	52	
53	.61297	.60319	.59362	.58425	.57509	.56611	.55732	.54870	.54024	53	
54	.61281	.60303	.59346	.58410	.57494	.56596	.55717	.54855	.54011	54	
55	.61264	.60286	.59330	.58395	.57479	.56582	.55703	.54841	.53997	55	
56	.61248	.60270	.59314	.58379	.57463	.56567	.55688	.54827	.53983	56	
57	.61231	.60254	.59299	.58364	.57448	.56552	.55674	.54813	.53969	57	
58	.61215	.60238	.59283	.58348	.57433	.56537	.55659	.54799	.53955	58	
59	.61198	.60222	.59267	.58333	.57418	.56522	.55645	.54784	.53941	59	

0° or 0'		PROP. LOGARITHMS. (r.)							0° or 0'	
"	52'	53'	54'	55'	56'	57'	58'	59'	"	
0	.53927	.53100	.52288	.51491	.50708	.49940	.49184	.48442	0	
1	.53913	.53086	.52274	.51478	.50696	.49927	.49172	.48430	1	
2	.53899	.53072	.52261	.51465	.50683	.49914	.49159	.48418	2	
3	.53885	.53059	.52248	.51452	.50670	.49902	.49147	.48405	3	
4	.53871	.53045	.52234	.51438	.50657	.49889	.49135	.48393	4	
5	.53857	.53031	.52221	.51425	.50644	.49876	.49122	.48381	5	
6	.53843	.53018	.52208	.51412	.50631	.49864	.49110	.48369	6	
7	.53830	.53004	.52194	.51399	.50618	.49851	.49097	.48356	7	
8	.53816	.52991	.52181	.51386	.50605	.49838	.49085	.48344	8	
9	.53802	.52977	.52167	.51373	.50592	.49826	.49072	.48332	9	
10	.53788	.52963	.52154	.51360	.50579	.49813	.49060	.48320	10	
11	.53774	.52950	.52141	.51346	.50566	.49800	.49047	.48307	11	
12	.53760	.52936	.52127	.51333	.50554	.49788	.49035	.48295	12	
13	.53746	.52922	.52114	.51320	.50541	.49775	.49023	.48283	13	
14	.53732	.52909	.52101	.51307	.50528	.49762	.49010	.48271	14	
15	.53719	.52895	.52087	.51294	.50515	.49750	.48998	.48258	15	
16	.53705	.52882	.52074	.51281	.50502	.49737	.48985	.48246	16	
17	.53691	.52868	.52061	.51268	.50489	.49724	.48973	.48234	17	
18	.53677	.52855	.52047	.51255	.50476	.49712	.48960	.48222	18	
19	.53663	.52841	.52034	.51242	.50464	.49699	.48948	.48210	19	
20	.53649	.52827	.52021	.51229	.50451	.49687	.48936	.48197	20	
21	.53636	.52814	.52007	.51215	.50438	.49674	.48923	.48185	21	
22	.53622	.52800	.51994	.51202	.50425	.49661	.48911	.48173	22	
23	.53608	.52787	.51981	.51189	.50412	.49649	.48898	.48161	23	
24	.53594	.52773	.51967	.51176	.50399	.49636	.48886	.48149	24	
25	.53580	.52760	.51954	.51163	.50387	.49623	.48874	.48136	25	
26	.53567	.52746	.51941	.51150	.50374	.49611	.48861	.48124	26	
27	.53553	.52732	.51927	.51137	.50361	.49598	.48849	.48112	27	
28	.53539	.52719	.51914	.51124	.50348	.49586	.48836	.48100	28	
29	.53525	.52705	.51901	.51111	.50336	.49573	.48824	.48088	29	
30	.53511	.52692	.51888	.51098	.50322	.49560	.48812	.48076	30	
31	.53498	.52678	.51874	.51085	.50310	.49548	.48799	.48063	31	
32	.53484	.52665	.51861	.51072	.50297	.49535	.48787	.48051	32	
33	.53470	.52651	.51848	.51059	.50284	.49523	.48775	.48039	33	
34	.53456	.52638	.51835	.51046	.50271	.49510	.48762	.48027	34	
35	.53442	.52624	.51821	.51033	.50258	.49498	.48750	.48015	35	
36	.53429	.52611	.51808	.51020	.50246	.49485	.48737	.48003	36	
37	.53415	.52597	.51795	.51007	.50233	.49472	.48725	.47990	37	
38	.53401	.52584	.51781	.50994	.50220	.49460	.48713	.47978	38	
39	.53387	.52570	.51768	.50981	.50207	.49447	.48700	.47966	39	
40	.53374	.52557	.51755	.50968	.50194	.49435	.48688	.47954	40	
41	.53360	.52543	.51742	.50955	.50182	.49422	.48676	.47942	41	
42	.53346	.52530	.51729	.50942	.50169	.49410	.48663	.47930	42	
43	.53332	.52516	.51715	.50929	.50156	.49397	.48651	.47918	43	
44	.53319	.52503	.51702	.50916	.50143	.49385	.48639	.47906	44	
45	.53305	.52489	.51689	.50903	.50131	.49372	.48626	.47893	45	
46	.53291	.52476	.51676	.50890	.50118	.49360	.48614	.47881	46	
47	.53278	.52462	.51662	.50877	.50105	.49347	.48602	.47869	47	
48	.53264	.52449	.51649	.50864	.50092	.49334	.48590	.47857	48	
49	.53250	.52436	.51636	.50851	.50080	.49322	.48577	.47845	49	
50	.53236	.52422	.51623	.50838	.50067	.49309	.48565	.47833	50	
51	.53223	.52409	.51610	.50825	.50054	.49297	.48553	.47821	51	
52	.53209	.52395	.51596	.50812	.50041	.49284	.48540	.47809	52	
53	.53195	.52382	.51583	.50799	.50029	.49272	.48528	.47797	53	
54	.53182	.52368	.51570	.50786	.50016	.49259	.48516	.47785	54	
55	.53168	.52355	.51557	.50773	.50003	.49247	.48503	.47772	55	
56	.53154	.52342	.51544	.50760	.49991	.49234	.48491	.47760	56	
57	.53141	.52328	.51530	.50747	.49978	.49222	.48479	.47748	57	
58	.53127	.52315	.51517	.50734	.49965	.49209	.48467	.47736	58	
59	.53113	.52301	.51504	.50721	.49952	.49197	.48454	.47724	59	

1 ^h or 1 ^o		PROP. LOGARITHMS. (r.)									1 ^h or 1 ^o
"	0'	1	2'	3'	4'	5'	6'	7'	8'	9'	
0	.47712	.46994	.46288	.45593	.44909	.44236	.43573	.42920	.42276	.41642	
1	.47700	.46982	.46276	.45582	.44898	.44225	.43562	.42909	.42266	.41632	
2	.47688	.46971	.46265	.45570	.44887	.44214	.43551	.42898	.42255	.41621	
3	.47676	.46959	.46253	.45559	.44875	.44203	.43540	.42887	.42244	.41611	
4	.47664	.46947	.46241	.45547	.44864	.44191	.43529	.42877	.42234	.41600	
5	.47652	.46935	.46230	.45536	.44853	.44180	.43518	.42866	.42223	.41590	
6	.47640	.46923	.46218	.45524	.44841	.44169	.43507	.42855	.42213	.41579	
7	.47628	.46911	.46206	.45513	.44830	.44158	.43496	.42844	.42202	.41569	
8	.47616	.46899	.46195	.45501	.44819	.44147	.43485	.42833	.42191	.41559	
9	.47604	.46888	.46183	.45490	.44808	.44136	.43474	.42823	.42181	.41548	
10	.47592	.46876	.46171	.45478	.44796	.44125	.43463	.42812	.42170	.41538	
11	.47580	.46864	.46160	.45467	.44785	.44114	.43452	.42801	.42159	.41527	
12	.47568	.46852	.46148	.45456	.44774	.44102	.43441	.42790	.42149	.41517	
13	.47556	.46840	.46137	.45444	.44762	.44091	.43431	.42780	.42138	.41506	
14	.47544	.46828	.46125	.45433	.44751	.44080	.43420	.42769	.42128	.41496	
15	.47532	.46817	.46113	.45421	.44740	.44069	.43409	.42758	.42117	.41485	
16	.47520	.46805	.46102	.45410	.44729	.44058	.43398	.42747	.42106	.41475	
17	.47508	.46793	.46090	.45398	.44717	.44047	.43387	.42737	.42096	.41464	
18	.47496	.46781	.46078	.45387	.44706	.44036	.43376	.42726	.42085	.41454	
19	.47484	.46769	.46067	.45375	.44695	.44025	.43365	.42715	.42075	.41443	
20	.47472	.46758	.46055	.45364	.44684	.44014	.43354	.42704	.42064	.41433	
21	.47460	.46746	.46044	.45353	.44672	.44003	.43343	.42693	.42053	.41423	
22	.47448	.46734	.46032	.45341	.44661	.43992	.43332	.42683	.42043	.41412	
23	.47436	.46722	.46020	.45330	.44650	.43981	.43321	.42672	.42032	.41402	
24	.47424	.46710	.46009	.45318	.44639	.43969	.43310	.42661	.42022	.41391	
25	.47412	.46699	.45997	.45307	.44627	.43958	.43300	.42651	.42011	.41381	
26	.47400	.46687	.45986	.45295	.44616	.43947	.43289	.42640	.42000	.41370	
27	.47388	.46675	.45974	.45284	.44605	.43936	.43278	.42629	.41990	.41360	
28	.47376	.46663	.45962	.45273	.44594	.43925	.43267	.42618	.41979	.41350	
29	.47364	.46652	.45951	.45261	.44583	.43914	.43256	.42608	.41969	.41339	
30	.47352	.46640	.45939	.45250	.44571	.43903	.43245	.42597	.41958	.41329	
31	.47340	.46628	.45928	.45238	.44560	.43892	.43234	.42586	.41948	.41318	
32	.47328	.46616	.45916	.45227	.44549	.43881	.43223	.42575	.41937	.41308	
33	.47316	.46604	.45905	.45216	.44538	.43870	.43212	.42565	.41927	.41298	
34	.47304	.46593	.45893	.45204	.44526	.43859	.43202	.42554	.41916	.41287	
35	.47292	.46581	.45881	.45193	.44515	.43848	.43191	.42543	.41905	.41277	
36	.47280	.46569	.45870	.45182	.44504	.43837	.43180	.42533	.41895	.41266	
37	.47268	.46557	.45858	.45170	.44493	.43826	.43169	.42522	.41884	.41256	
38	.47256	.46546	.45847	.45159	.44482	.43815	.43158	.42511	.41874	.41246	
39	.47244	.46534	.45835	.45147	.44470	.43804	.43147	.42500	.41863	.41235	
40	.47232	.46522	.45824	.45136	.44459	.43793	.43136	.42490	.41853	.41225	
41	.47220	.46510	.45812	.45125	.44448	.43782	.43126	.42479	.41842	.41214	
42	.47208	.46499	.45800	.45113	.44437	.43771	.43115	.42468	.41832	.41204	
43	.47196	.46487	.45789	.45102	.44426	.43760	.43104	.42458	.41821	.41194	
44	.47185	.46475	.45777	.45091	.44414	.43749	.43093	.42447	.41811	.41183	
45	.47173	.46464	.45766	.45079	.44403	.43738	.43082	.42436	.41800	.41173	
46	.47161	.46452	.45754	.45068	.44392	.43727	.43071	.42426	.41789	.41162	
47	.47149	.46440	.45743	.45057	.44381	.43716	.43060	.42415	.41779	.41152	
48	.47137	.46428	.45731	.45045	.44370	.43705	.43050	.42404	.41768	.41142	
49	.47125	.46417	.45720	.45034	.44359	.43694	.43039	.42394	.41758	.41131	
50	.47113	.46405	.45708	.45022	.44347	.43683	.43028	.42383	.41747	.41121	
51	.47101	.46393	.45697	.45011	.44336	.43672	.43017	.42372	.41737	.41111	
52	.47089	.46382	.45685	.45000	.44325	.43661	.43006	.42362	.41726	.41100	
53	.47077	.46370	.45674	.44988	.44314	.43650	.42995	.42351	.41716	.41090	
54	.47066	.46358	.45662	.44977	.44303	.43639	.42985	.42340	.41705	.41080	
55	.47054	.46346	.45651	.44966	.44292	.43628	.42974	.42330	.41695	.41069	
56	.47042	.46335	.45639	.44955	.44280	.43617	.42963	.42319	.41684	.41059	
57	.47030	.46323	.45628	.44943	.44269	.43606	.42952	.42308	.41674	.41048	
58	.47018	.46311	.45616	.44932	.44258	.43595	.42941	.42298	.41663	.41038	
59	.47006	.46300	.45605	.44921	.44247	.43584	.42931	.42287	.41653	.41028	

1 ^h or 1 ^o		PROP. LOGARITHMS. (r.)									1 ^h or 1 ^o
#	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	
0	.41017	.40401	.39794	.39195	.38604	.38021	.37446	.36878	.36318	.35765	
1	.41007	.40391	.39784	.39185	.38594	.38011	.37436	.36869	.36309	.35755	
2	.40997	.40381	.39774	.39175	.38585	.38002	.37427	.36859	.36299	.35746	
3	.40986	.40371	.39764	.39165	.38575	.37992	.37417	.36850	.36290	.35737	
4	.40976	.40361	.39754	.39155	.38565	.37983	.37408	.36841	.36281	.35728	
5	.40966	.40350	.39744	.39145	.38555	.37973	.37398	.36831	.36271	.35719	
6	.40955	.40340	.39734	.39136	.38545	.37963	.37389	.36822	.36262	.35710	
7	.40945	.40330	.39724	.39126	.38536	.37954	.37379	.36812	.36253	.35700	
8	.40935	.40320	.39714	.39116	.38526	.37944	.37370	.36803	.36244	.35691	
9	.40924	.40310	.39704	.39106	.38516	.37934	.37360	.36794	.36234	.35682	
10	.40914	.40300	.39694	.39096	.38506	.37925	.37351	.36784	.36225	.35673	
11	.40904	.40289	.39684	.39086	.38497	.37915	.37341	.36775	.36216	.35664	
12	.40894	.40279	.39674	.39076	.38487	.37905	.37332	.36766	.36207	.35655	
13	.40883	.40269	.39664	.39066	.38477	.37896	.37322	.36756	.36197	.35646	
14	.40873	.40259	.39653	.39056	.38467	.37886	.37313	.36747	.36188	.35636	
15	.40863	.40249	.39643	.39046	.38458	.37877	.37303	.36737	.36179	.35627	
16	.40852	.40239	.39633	.39037	.38448	.37867	.37294	.36728	.36170	.35618	
17	.40842	.40228	.39623	.39027	.38438	.37857	.37284	.36719	.36160	.35609	
18	.40832	.40218	.39613	.39017	.38428	.37848	.37275	.36709	.36151	.35600	
19	.40821	.40208	.39603	.39007	.38419	.37838	.37265	.36700	.36142	.35591	
20	.40811	.40198	.39593	.38997	.38409	.37829	.37256	.36691	.36133	.35582	
21	.40801	.40188	.39583	.38987	.38399	.37819	.37246	.36681	.36123	.35573	
22	.40791	.40178	.39573	.38977	.38389	.37809	.37237	.36672	.36114	.35563	
23	.40780	.40168	.39563	.38968	.38380	.37800	.37227	.36663	.36105	.35554	
24	.40770	.40157	.39553	.38958	.38370	.37790	.37218	.36653	.36096	.35545	
25	.40760	.40147	.39543	.38948	.38360	.37781	.37208	.36644	.36086	.35536	
26	.40749	.40137	.39533	.38938	.38351	.37771	.37199	.36634	.36077	.35527	
27	.40739	.40127	.39523	.38928	.38341	.37761	.37189	.36625	.36068	.35518	
28	.40729	.40117	.39513	.38918	.38331	.37752	.37180	.36616	.36059	.35509	
29	.40719	.40107	.39503	.38908	.38321	.37742	.37171	.36606	.36050	.35500	
30	.40708	.40097	.39493	.38899	.38312	.37733	.37161	.36597	.36040	.35491	
31	.40698	.40087	.39483	.38889	.38302	.37723	.37152	.36588	.36031	.35481	
32	.40688	.40076	.39473	.38879	.38292	.37713	.37142	.36578	.36022	.35472	
33	.40678	.40066	.39464	.38869	.38282	.37704	.37133	.36569	.36013	.35463	
34	.40667	.40056	.39454	.38859	.38273	.37694	.37123	.36560	.36003	.35454	
35	.40657	.40046	.39444	.38849	.38263	.37685	.37114	.36550	.35994	.35445	
36	.40647	.40036	.39434	.38839	.38253	.37675	.37104	.36541	.35985	.35436	
37	.40637	.40026	.39424	.38830	.38244	.37665	.37095	.36532	.35976	.35427	
38	.40626	.40016	.39414	.38820	.38234	.37656	.37085	.36522	.35967	.35418	
39	.40616	.40006	.39404	.38810	.38224	.37646	.37076	.36513	.35957	.35409	
40	.40606	.39996	.39394	.38800	.38215	.37637	.37067	.36504	.35948	.35400	
41	.40596	.39985	.39384	.38790	.38205	.37627	.37057	.36494	.35939	.35391	
42	.40585	.39975	.39374	.38781	.38195	.37618	.37048	.36485	.35930	.35381	
43	.40575	.39965	.39364	.38771	.38186	.37608	.37038	.36476	.35921	.35372	
44	.40565	.39955	.39354	.38761	.38176	.37599	.37029	.36467	.35911	.35363	
45	.40555	.39945	.39344	.38751	.38166	.37589	.37019	.36457	.35902	.35354	
46	.40544	.39935	.39334	.38741	.38156	.37579	.37010	.36448	.35893	.35345	
47	.40534	.39925	.39324	.38731	.38147	.37570	.37001	.36439	.35884	.35336	
48	.40524	.39915	.39314	.38722	.38137	.37560	.36991	.36429	.35875	.35327	
49	.40514	.39905	.39304	.38712	.38127	.37551	.36982	.36420	.35865	.35318	
50	.40503	.39895	.39294	.38702	.38118	.37541	.36972	.36411	.35856	.35309	
51	.40493	.39885	.39284	.38692	.38108	.37532	.36963	.36401	.35847	.35300	
52	.40483	.39874	.39274	.38682	.38098	.37522	.36953	.36392	.35838	.35291	
53	.40473	.39864	.39264	.38673	.38089	.37513	.36944	.36383	.35829	.35282	
54	.40463	.39854	.39254	.38663	.38079	.37503	.36935	.36374	.35820	.35273	
55	.40452	.39844	.39245	.38653	.38069	.37494	.36925	.36364	.35810	.35264	
56	.40442	.39834	.39235	.38643	.38060	.37484	.36916	.36355	.35801	.35254	
57	.40432	.39824	.39225	.38633	.38050	.37474	.36906	.36346	.35792	.35245	
58	.40422	.39814	.39215	.38624	.38040	.37465	.36897	.36336	.35783	.35236	
59	.40412	.39804	.39205	.38614	.38031	.37455	.36888	.36327	.35774	.35227	

1 ^h or 1 ^o .		PROP. LOGARITHMS. (r.)									1 ^h or 1 ^o .
"	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'	
0	.35218	.34679	.34146	.33619	.33099	.32585	.32077	.31575	.31079	.30588	
1	.35209	.34670	.34137	.33611	.33091	.32577	.32069	.31567	.31071	.30580	
2	.35200	.34661	.34128	.33602	.33082	.32568	.32061	.31559	.31063	.30572	
3	.35191	.34652	.34119	.33593	.33073	.32560	.32052	.31550	.31054	.30564	
4	.35182	.34643	.34111	.33585	.33065	.32551	.32044	.31542	.31046	.30556	
5	.35173	.34634	.34102	.33576	.33056	.32543	.32035	.31534	.31038	.30548	
6	.35164	.34625	.34093	.33567	.33048	.32534	.32027	.31525	.31030	.30539	
7	.35155	.34616	.34084	.33558	.33039	.32526	.32019	.31517	.31021	.30531	
8	.35146	.34607	.34075	.33550	.33030	.32517	.32010	.31509	.31013	.30523	
9	.35137	.34598	.34066	.33541	.33022	.32509	.32002	.31501	.31005	.30515	
10	.35128	.34589	.34058	.33532	.33013	.32500	.31993	.31492	.30997	.30507	
11	.35119	.34581	.34049	.33524	.33005	.32492	.31985	.31484	.30989	.30499	
12	.35110	.34572	.34040	.33515	.32996	.32483	.31977	.31476	.30980	.30491	
13	.35101	.34563	.34031	.33506	.32987	.32475	.31968	.31467	.30972	.30483	
14	.35092	.34554	.34022	.33498	.32979	.32466	.31960	.31459	.30964	.30475	
15	.35083	.34545	.34014	.33489	.32970	.32458	.31951	.31451	.30956	.30466	
16	.35074	.34536	.34005	.33480	.32962	.32449	.31943	.31442	.30948	.30458	
17	.35065	.34527	.33996	.33471	.32953	.32441	.31935	.31434	.30939	.30450	
18	.35056	.34518	.33987	.33463	.32944	.32432	.31926	.31426	.30931	.30442	
19	.35047	.34509	.33978	.33454	.32936	.32424	.31918	.31418	.30923	.30434	
20	.35038	.34500	.33970	.33445	.32927	.32415	.31909	.31409	.30915	.30426	
21	.35029	.34491	.33961	.33437	.32919	.32407	.31901	.31401	.30907	.30418	
22	.35020	.34483	.33952	.33428	.32910	.32398	.31893	.31393	.30898	.30410	
23	.35011	.34474	.33943	.33419	.32902	.32390	.31884	.31384	.30890	.30402	
24	.35002	.34465	.33935	.33411	.32893	.32381	.31876	.31376	.30882	.30393	
25	.34993	.34456	.33926	.33402	.32884	.32373	.31867	.31368	.30874	.30385	
26	.34984	.34447	.33917	.33393	.32876	.32365	.31859	.31360	.30866	.30377	
27	.34975	.34438	.33908	.33385	.32867	.32356	.31851	.31351	.30857	.30369	
28	.34966	.34429	.33899	.33376	.32859	.32348	.31842	.31343	.30849	.30361	
29	.34957	.34420	.33891	.33367	.32850	.32339	.31834	.31335	.30841	.30353	
30	.34948	.34411	.33882	.33359	.32842	.32331	.31826	.31326	.30833	.30345	
31	.34939	.34403	.33873	.33350	.32833	.32322	.31817	.31318	.30825	.30337	
32	.34930	.34394	.33864	.33341	.32824	.32314	.31809	.31310	.30817	.30329	
33	.34921	.34385	.33856	.33333	.32816	.32305	.31801	.31302	.30808	.30321	
34	.34912	.34376	.33847	.33324	.32807	.32297	.31792	.31293	.30800	.30313	
35	.34903	.34367	.33838	.33315	.32799	.32288	.31784	.31285	.30792	.30305	
36	.34894	.34358	.33829	.33307	.32790	.32280	.31775	.31277	.30784	.30296	
37	.34885	.34349	.33820	.33298	.32782	.32271	.31767	.31269	.30776	.30288	
38	.34876	.34340	.33812	.33289	.32773	.32263	.31759	.31260	.30768	.30280	
39	.34867	.34332	.33803	.33281	.32765	.32255	.31750	.31252	.30759	.30272	
40	.34858	.34323	.33794	.33272	.32756	.32246	.31742	.31244	.30751	.30264	
41	.34849	.34314	.33785	.33263	.32747	.32238	.31734	.31236	.30743	.30256	
42	.34840	.34305	.33777	.33255	.32739	.32229	.31725	.31227	.30735	.30248	
43	.34831	.34296	.33768	.33246	.32730	.32221	.31717	.31219	.30727	.30240	
44	.34822	.34287	.33759	.33237	.32722	.32212	.31709	.31211	.30718	.30232	
45	.34813	.34278	.33750	.33229	.32713	.32204	.31700	.31203	.30710	.30224	
46	.34804	.34270	.33742	.33220	.32705	.32195	.31692	.31194	.30702	.30216	
47	.34795	.34261	.33733	.33211	.32696	.32187	.31684	.31186	.30694	.30208	
48	.34786	.34252	.33724	.33203	.32688	.32179	.31675	.31178	.30686	.30200	
49	.34777	.34243	.33715	.33194	.32679	.32170	.31667	.31170	.30678	.30192	
50	.34768	.34234	.33707	.33186	.32671	.32162	.31659	.31161	.30670	.30183	
51	.34759	.34225	.33698	.33177	.32662	.32153	.31650	.31153	.30662	.30175	
52	.34750	.34217	.33689	.33168	.32654	.32145	.31642	.31145	.30653	.30167	
53	.34741	.34208	.33681	.33160	.32645	.32136	.31634	.31137	.30645	.30159	
54	.34732	.34199	.33672	.33151	.32636	.32128	.31625	.31128	.30637	.30151	
55	.34723	.34190	.33663	.33142	.32628	.32120	.31617	.31120	.30629	.30143	
56	.34715	.34181	.33654	.33134	.32619	.32111	.31609	.31112	.30621	.30135	
57	.34706	.34172	.33646	.33125	.32611	.32103	.31600	.31104	.30613	.30127	
58	.34697	.34164	.33637	.33117	.32602	.32094	.31592	.31095	.30605	.30119	
59	.34688	.34155	.33628	.33108	.32594	.32086	.31584	.31087	.30596	.30111	

1 ^h or 1 ^o .		PROP. LOGARITHMS. (r.)									1 ^h or 1 ^o .
n	30'	31'	32'	33'	34'	35'	36'	37'	38'	39'	
0	.30103	.29623	.29148	.28679	.28214	.27755	.27300	.26850	.26405	.25964	
1	.30097	.29615	.29141	.28671	.28207	.27747	.27293	.26843	.26397	.25956	
2	.30087	.29607	.29133	.28663	.28199	.27740	.27285	.26835	.26390	.25949	
3	.30079	.29599	.29125	.28656	.28191	.27732	.27278	.26828	.26382	.25942	
4	.30071	.29591	.29117	.28648	.28184	.27724	.27270	.26820	.26375	.25934	
5	.30063	.29583	.29109	.28640	.28176	.27717	.27262	.26813	.26368	.25927	
6	.30055	.29575	.29101	.28632	.28168	.27709	.27255	.26805	.26360	.25920	
7	.30047	.29567	.29093	.28625	.28161	.27702	.27247	.26798	.26353	.25913	
8	.30039	.29560	.29086	.28617	.28153	.27694	.27240	.26790	.26346	.25905	
9	.30031	.29552	.29078	.28609	.28145	.27686	.27232	.26783	.26338	.25898	
10	.30023	.29544	.29070	.28601	.28138	.27679	.27225	.26775	.26331	.25891	
11	.30015	.29536	.29062	.28593	.28130	.27671	.27217	.26768	.26323	.25883	
12	.30007	.29528	.29054	.28586	.28122	.27664	.27210	.26761	.26316	.25876	
13	.29999	.29520	.29046	.28578	.28114	.27656	.27202	.26753	.26309	.25869	
14	.29991	.29512	.29038	.28570	.28107	.27648	.27195	.26746	.26301	.25861	
15	.29983	.29504	.29031	.28562	.28099	.27641	.27187	.26738	.26294	.25854	
16	.29975	.29496	.29023	.28555	.28091	.27633	.27180	.26731	.26287	.25847	
17	.29966	.29488	.29015	.28547	.28084	.27626	.27172	.26723	.26279	.25839	
18	.29958	.29480	.2900	.28539	.28076	.27618	.27165	.26716	.26272	.25832	
19	.29950	.29472	.28999	.28531	.28068	.27610	.27157	.26709	.26265	.25825	
20	.29942	.29464	.28991	.28524	.28061	.27603	.27150	.26701	.26257	.25818	
21	.29934	.29456	.28984	.28516	.28053	.27595	.27142	.26694	.26250	.25810	
22	.29926	.29448	.28976	.28508	.28045	.27588	.27135	.26686	.26242	.25803	
23	.29918	.29441	.28968	.28500	.28038	.27580	.27127	.26679	.26235	.25796	
24	.29910	.29433	.28960	.28493	.28030	.27572	.27120	.26671	.26228	.25789	
25	.29902	.29425	.28952	.28485	.28022	.27565	.27112	.26664	.26220	.25781	
26	.29894	.29417	.28944	.28477	.28015	.27557	.27105	.26656	.26213	.25774	
27	.29886	.29409	.28937	.28469	.28007	.27550	.27097	.26649	.26206	.25767	
28	.29878	.29401	.28929	.28462	.27999	.27542	.27090	.26642	.26198	.25759	
29	.29870	.29393	.28921	.28454	.27992	.27534	.27082	.26634	.26191	.25752	
30	.29862	.29385	.28913	.28446	.27984	.27527	.27075	.26627	.26184	.25745	
31	.29854	.29377	.28905	.28438	.27976	.27519	.27067	.26619	.26176	.25738	
32	.29846	.29369	.28897	.28431	.27969	.27512	.27060	.26612	.26169	.25730	
33	.29838	.29361	.28890	.28423	.27961	.27504	.27052	.26605	.26162	.25723	
34	.29830	.29354	.28882	.28415	.27953	.27497	.27045	.26597	.26154	.25716	
35	.29822	.29346	.28874	.28407	.27946	.27489	.27037	.26590	.26147	.25709	
36	.29814	.29338	.28866	.28400	.27938	.27481	.27030	.26582	.26140	.25701	
37	.29806	.29330	.28858	.28392	.27930	.27474	.27022	.26575	.26132	.25694	
38	.29798	.29322	.28851	.28384	.27923	.27466	.27015	.26567	.26125	.25687	
39	.29790	.29314	.28843	.28376	.27915	.27459	.27007	.26560	.26118	.25680	
40	.29782	.29306	.28835	.28369	.27908	.27451	.27000	.26553	.26110	.25672	
41	.29775	.29298	.28827	.28361	.27900	.27444	.26992	.26545	.26103	.25665	
42	.29767	.29290	.28819	.28353	.27892	.27436	.26985	.26538	.26096	.25658	
43	.29759	.29282	.28811	.28346	.27885	.27428	.26977	.26530	.26088	.25650	
44	.29751	.29275	.28804	.28338	.27877	.27421	.26970	.26523	.26081	.25643	
45	.29743	.29267	.28796	.28330	.27869	.27413	.26962	.26516	.26074	.25636	
46	.29735	.29259	.28788	.28322	.27862	.27406	.26955	.26508	.26066	.25629	
47	.29727	.29251	.28780	.28315	.27854	.27398	.26947	.26501	.26059	.25621	
48	.29719	.29243	.28772	.28307	.27846	.27391	.26940	.26493	.26052	.25614	
49	.29711	.29235	.28765	.28300	.27839	.27383	.26932	.26486	.26044	.25607	
50	.29703	.29227	.28757	.28292	.27831	.27376	.26925	.26479	.26037	.25600	
51	.29695	.29219	.28749	.28284	.27824	.27368	.26917	.26471	.26030	.25592	
52	.29687	.29211	.28741	.28276	.27816	.27360	.26910	.26464	.26022	.25585	
53	.29679	.29204	.28733	.28268	.27808	.27353	.26902	.26456	.26015	.25578	
54	.29671	.29196	.28726	.28261	.27801	.27345	.26895	.26449	.26008	.25571	
55	.29663	.29188	.28718	.28253	.27793	.27338	.26887	.26442	.26000	.25563	
56	.29655	.29180	.28710	.28245	.27785	.27330	.26880	.26434	.25993	.25556	
57	.29647	.29172	.28702	.28238	.27778	.27323	.26872	.26427	.25986	.25549	
58	.29639	.29164	.28695	.28230	.27770	.27315	.26865	.26420	.25978	.25542	
59	.29631	.29156	.28687	.28222	.27763	.27308	.26858	.26412	.25971	.25534	

1 ^h or 1 ^o .		PROP. LOGARITHMS. (r.)								1 ^h or 1 ^o .	
"	40'	41'	42'	43'	44'	45'	46'	47'	48'	49'	
0	.25527	.25095	.24667	.24244	.23824	.23408	.22997	.22589	.22185	.21785	
1	.25520	.25088	.24660	.24237	.23817	.23401	.22990	.22582	.22178	.21778	
2	.25513	.25081	.24653	.24229	.23810	.23395	.22983	.22575	.22171	.21771	
3	.25506	.25074	.24646	.24222	.23803	.23388	.22976	.22569	.22165	.21765	
4	.25498	.25066	.24639	.24215	.23796	.23381	.22969	.22562	.22158	.21758	
5	.25491	.25059	.24632	.24208	.23789	.23374	.22963	.22555	.22151	.21751	
6	.25484	.25052	.24625	.24201	.23782	.23367	.22956	.22548	.22145	.21745	
7	.25477	.25045	.24618	.24194	.23775	.23360	.22949	.22542	.22138	.21738	
8	.25469	.25038	.24610	.24187	.23768	.23353	.22942	.22535	.22131	.21732	
9	.25462	.25031	.24603	.24180	.23761	.23346	.22935	.22528	.22125	.21725	
10	.25455	.25024	.24596	.24173	.23754	.23339	.22928	.22521	.22118	.21718	
11	.25448	.25016	.24589	.24166	.23747	.23333	.22922	.22515	.22111	.21712	
12	.25440	.25009	.24582	.24159	.23740	.23326	.22915	.22508	.22105	.21705	
13	.25433	.25002	.24575	.24152	.23734	.23319	.22908	.22501	.22098	.21698	
14	.25426	.24995	.24568	.24145	.23727	.23312	.22901	.22494	.22091	.21692	
15	.25419	.24988	.24561	.24138	.23720	.23305	.22894	.22488	.22084	.21685	
16	.25412	.24981	.24554	.24131	.23713	.23298	.22888	.22481	.22078	.21678	
17	.25404	.24974	.24547	.24124	.23706	.23291	.22881	.22474	.22071	.21672	
18	.25397	.24966	.24540	.24117	.23699	.23284	.22874	.22467	.22064	.21665	
19	.25390	.24959	.24533	.24110	.23692	.23278	.22867	.22461	.22058	.21659	
20	.25383	.24952	.24526	.24103	.23685	.23271	.22860	.22454	.22051	.21652	
21	.25376	.24945	.24518	.24096	.23678	.23264	.22854	.22447	.22044	.21645	
22	.25368	.24938	.24511	.24089	.23671	.23257	.22847	.22440	.22038	.21639	
23	.25361	.24931	.24504	.24082	.23664	.23250	.22840	.22434	.22031	.21632	
24	.25354	.24923	.24497	.24075	.23657	.23243	.22833	.22427	.22024	.21626	
25	.25347	.24916	.24490	.24068	.23650	.23236	.22826	.22420	.22018	.21619	
26	.25339	.24909	.24483	.24061	.23643	.23229	.22819	.22413	.22011	.21612	
27	.25332	.24902	.24476	.24054	.23636	.23223	.22813	.22407	.22004	.21606	
28	.25325	.24895	.24469	.24047	.23629	.23216	.22806	.22400	.21998	.21599	
29	.25318	.24888	.24462	.24040	.23623	.23209	.22799	.22393	.21991	.21592	
30	.25311	.24881	.24455	.24033	.23616	.23202	.22792	.22386	.21984	.21586	
31	.25303	.24874	.24448	.24026	.23609	.23195	.22785	.22380	.21978	.21579	
32	.25296	.24866	.24441	.24019	.23602	.23188	.22779	.22373	.21971	.21573	
33	.25289	.24859	.24434	.24012	.23595	.23181	.22772	.22366	.21964	.21566	
34	.25282	.24852	.24427	.24005	.23588	.23175	.22765	.22359	.21958	.21559	
35	.25275	.24845	.24420	.23998	.23581	.23168	.22758	.22353	.21951	.21553	
36	.25267	.24838	.24413	.23991	.23574	.23161	.22752	.22346	.21944	.21546	
37	.25260	.24831	.24405	.23984	.23567	.23154	.22745	.22339	.21938	.21540	
38	.25253	.24824	.24398	.23977	.23560	.23147	.22738	.22333	.21931	.21533	
39	.25246	.24817	.24391	.23970	.23553	.23140	.22731	.22326	.21924	.21526	
40	.25239	.24809	.24384	.23963	.23546	.23133	.22724	.22319	.21918	.21520	
41	.25231	.24802	.24377	.23956	.23539	.23127	.22718	.22312	.21911	.21513	
42	.25224	.24795	.24370	.23949	.23533	.23120	.22711	.22306	.21904	.21507	
43	.25217	.24788	.24363	.23942	.23526	.23113	.22704	.22299	.21898	.21500	
44	.25210	.24781	.24356	.23935	.23519	.23106	.22697	.22292	.21891	.21493	
45	.25203	.24774	.24349	.23928	.23512	.23099	.22690	.22286	.21884	.21487	
46	.25196	.24767	.24342	.23921	.23505	.23092	.22684	.22279	.21878	.21480	
47	.25188	.24760	.24335	.23914	.23498	.23086	.22677	.22272	.21871	.21474	
48	.25181	.24752	.24328	.23908	.23491	.23079	.22670	.22265	.21864	.21467	
49	.25174	.24745	.24321	.23901	.23484	.23072	.22663	.22259	.21858	.21460	
50	.25167	.24738	.24314	.23894	.23477	.23065	.22657	.22252	.21851	.21454	
51	.25160	.24731	.24307	.23887	.23470	.23058	.22650	.22245	.21844	.21447	
52	.25152	.24724	.24300	.23880	.23464	.23051	.22643	.22239	.21838	.21441	
53	.25145	.24717	.24293	.23873	.23457	.23044	.22636	.22232	.21831	.21434	
54	.25138	.24710	.24286	.23866	.23450	.23038	.22630	.22225	.21824	.21427	
55	.25131	.24703	.24279	.23859	.23443	.23031	.22623	.22218	.21818	.21421	
56	.25124	.24696	.24272	.23852	.23436	.23024	.22616	.22212	.21811	.21414	
57	.25117	.24689	.24265	.23845	.23429	.23017	.22609	.22205	.21805	.21408	
58	.25109	.24681	.24258	.23838	.23422	.23010	.22602	.22198	.21798	.21401	
59	.25102	.24674	.24251	.23831	.23415	.23003	.22596	.22192	.21791	.21395	

1 ^h or 1 ^o		PROP. LOGARITHMS. (r.)									1 ^h or 1 ^o
"	50'	51'	52'	53'	54'	55'	56'	57'	58'	59'	
0	.21388	.20995	.20605	.20219	.19837	.19457	.19081	.18710	.18339	.17973	
1	.21381	.20988	.20599	.20213	.19830	.19451	.19075	.18702	.18333	.17966	
2	.21375	.20982	.20593	.20207	.19824	.19445	.19069	.18696	.18327	.17960	
3	.21368	.20975	.20586	.20200	.19818	.19439	.19063	.18690	.18321	.17954	
4	.21362	.20969	.20580	.20194	.19811	.19432	.19056	.18684	.18315	.17948	
5	.21355	.20962	.20573	.20187	.19805	.19426	.19050	.18678	.18308	.17942	
6	.21349	.20956	.20567	.20181	.19799	.19420	.19044	.18672	.18302	.17936	
7	.21342	.20949	.20560	.20175	.19792	.19413	.19038	.18665	.18296	.17930	
8	.21335	.20943	.20554	.20168	.19786	.19407	.19032	.18659	.18290	.17924	
9	.21329	.20936	.20547	.20162	.19780	.19401	.19025	.18653	.18284	.17918	
10	.21322	.20930	.20541	.20155	.19773	.19395	.19019	.18647	.18278	.17912	
11	.21316	.20923	.20534	.20149	.19767	.19388	.19013	.18641	.18272	.17906	
12	.21309	.20917	.20528	.20143	.19761	.19382	.19007	.18634	.18266	.17900	
13	.21303	.20910	.20522	.20136	.19754	.19376	.19000	.18628	.18259	.17894	
14	.21296	.20904	.20515	.20130	.19748	.19369	.18994	.18622	.18253	.17887	
15	.21289	.20897	.20509	.20123	.19742	.19363	.18988	.18616	.18247	.17881	
16	.21283	.20891	.20502	.20117	.19735	.19357	.18982	.18610	.18241	.17875	
17	.21276	.20884	.20496	.20111	.19729	.19351	.18976	.18604	.18235	.17869	
18	.21270	.20878	.20489	.20104	.19723	.19344	.18969	.18597	.18229	.17863	
19	.21263	.20871	.20483	.20098	.19716	.19338	.18963	.18591	.18223	.17857	
20	.21257	.20865	.20476	.20091	.19710	.19332	.18957	.18585	.18217	.17851	
21	.21250	.20858	.20470	.20085	.19704	.19325	.18951	.18579	.18210	.17845	
22	.21243	.20852	.20464	.20079	.19697	.19319	.18944	.18573	.18204	.17839	
23	.21237	.20845	.20457	.20072	.19691	.19313	.18938	.18567	.18198	.17833	
24	.21230	.20839	.20451	.20066	.19685	.19307	.18932	.18560	.18192	.17827	
25	.21224	.20832	.20444	.20060	.19678	.19300	.18926	.18554	.18186	.17821	
26	.21217	.20826	.20438	.20053	.19672	.19294	.18920	.18548	.18180	.17815	
27	.21211	.20819	.20431	.20047	.19666	.19288	.18913	.18542	.18174	.17809	
28	.21204	.20813	.20425	.20040	.19659	.19282	.18907	.18536	.18168	.17803	
29	.21198	.20806	.20418	.20034	.19653	.19275	.18901	.18530	.18162	.17797	
30	.21191	.20800	.20412	.20028	.19647	.19269	.18895	.18523	.18155	.17790	
31	.21184	.20793	.20406	.20021	.19640	.19263	.18888	.18517	.18149	.17784	
32	.21178	.20787	.20399	.20015	.19634	.19257	.18882	.18511	.18143	.17778	
33	.21171	.20780	.20393	.20009	.19628	.19250	.18876	.18505	.18137	.17772	
34	.21165	.20774	.20386	.20002	.19621	.19244	.18870	.18499	.18131	.17766	
35	.21158	.20767	.20380	.19996	.19615	.19238	.18864	.18493	.18125	.17760	
36	.21152	.20761	.20373	.19989	.19609	.19231	.18857	.18487	.18119	.17754	
37	.21145	.20754	.20367	.19983	.19602	.19225	.18851	.18480	.18113	.17748	
38	.21139	.20748	.20361	.19977	.19596	.19219	.18845	.18474	.18107	.17742	
39	.21132	.20741	.20354	.19970	.19590	.19213	.18839	.18468	.18100	.17736	
40	.21126	.20735	.20348	.19964	.19584	.19206	.18833	.18462	.18094	.17730	
41	.21119	.20728	.20341	.19958	.19577	.19200	.18826	.18456	.18088	.17724	
42	.21112	.20722	.20335	.19951	.19571	.19194	.18820	.18450	.18082	.17718	
43	.21106	.20715	.20328	.19945	.19565	.19188	.18814	.18443	.18076	.17712	
44	.21099	.20709	.20322	.19938	.19558	.19181	.18808	.18437	.18070	.17706	
45	.21093	.20702	.20316	.19932	.19552	.19175	.18802	.18431	.18064	.17700	
46	.21086	.20696	.20309	.19926	.19546	.19169	.18795	.18425	.18058	.17694	
47	.21080	.20690	.20303	.19919	.19539	.19163	.18789	.18419	.18052	.17688	
48	.21073	.20683	.20296	.19913	.19533	.19156	.18783	.18413	.18046	.17682	
49	.21067	.20677	.20290	.19907	.19527	.19150	.18777	.18407	.18040	.17676	
50	.21060	.20670	.20284	.19900	.19520	.19144	.18771	.18400	.18033	.17669	
51	.21054	.20664	.20277	.19894	.19514	.19138	.18764	.18394	.18027	.17663	
52	.21047	.20657	.20271	.19888	.19508	.19131	.18758	.18388	.18021	.17657	
53	.21041	.20651	.20264	.19881	.19502	.19125	.18752	.18382	.18015	.17651	
54	.21034	.20644	.20258	.19875	.19495	.19119	.18746	.18376	.18009	.17645	
55	.21028	.20638	.20251	.19869	.19489	.19113	.18740	.18370	.18003	.17639	
56	.21021	.20631	.20245	.19862	.19483	.19106	.18733	.18364	.17997	.17633	
57	.21015	.20625	.20239	.19856	.19476	.19100	.18727	.18357	.17991	.17627	
58	.21008	.20618	.20232	.19849	.19470	.19094	.18721	.18351	.17985	.17621	
59	.21001	.20612	.20226	.19843	.19464	.19088	.18715	.18345	.17979	.17615	

2 ^h or 2 ^a .		PROP. LOGARITHMS. (r.)									2 ^h or 2 ^a .
"	0'	1'	2'	3'	4'	5'	6'	7'	8'	9'	
0	.17609	.17249	.16891	.16537	.16185	.15836	.15490	.15147	.14806	.14468	
1	.17603	.17243	.16885	.16531	.16179	.15830	.15484	.15141	.14801	.14463	
2	.17597	.17237	.16879	.16525	.16173	.15825	.15479	.15135	.14795	.14457	
3	.17591	.17231	.16873	.16519	.16168	.15819	.15473	.15130	.14789	.14451	
4	.17585	.17225	.16868	.16513	.16162	.15813	.15467	.15124	.14784	.14446	
5	.17579	.17219	.16862	.16507	.16156	.15807	.15461	.15118	.14778	.14440	
6	.17573	.17213	.16856	.16501	.16150	.15802	.15456	.15113	.14772	.14435	
7	.17567	.17207	.16850	.16496	.16144	.15796	.15450	.15107	.14767	.14429	
8	.17561	.17201	.16844	.16490	.16138	.15790	.15444	.15101	.14761	.14423	
9	.17555	.17195	.16838	.16484	.16133	.15784	.15439	.15096	.14755	.14418	
10	.17549	.17189	.16832	.16478	.16127	.15778	.15433	.15090	.14750	.14412	
11	.17543	.17183	.16826	.16472	.16121	.15773	.15427	.15084	.14744	.14407	
12	.17537	.17177	.16820	.16466	.16115	.15767	.15421	.15079	.14738	.14401	
13	.17531	.17171	.16814	.16460	.16109	.15761	.15416	.15073	.14733	.14395	
14	.17525	.17165	.16808	.16454	.16103	.15755	.15410	.15067	.14727	.14390	
15	.17519	.17159	.16802	.16449	.16098	.15749	.15404	.15061	.14722	.14384	
16	.17513	.17153	.16796	.16443	.16092	.15744	.15398	.15056	.14716	.14379	
17	.17507	.17147	.16791	.16437	.16086	.15738	.15393	.15050	.14710	.14373	
18	.17501	.17141	.16785	.16431	.16080	.15732	.15387	.15044	.14705	.14367	
19	.17495	.17135	.16779	.16425	.16074	.15726	.15381	.15039	.14699	.14362	
20	.17489	.17129	.16773	.16419	.16068	.15721	.15375	.15033	.14693	.14356	
21	.17483	.17123	.16767	.16413	.16063	.15715	.15370	.15027	.14688	.14351	
22	.17477	.17117	.16761	.16407	.16057	.15709	.15364	.15022	.14682	.14345	
23	.17471	.17111	.16755	.16402	.16051	.15703	.15358	.15016	.14676	.14339	
24	.17465	.17105	.16749	.16396	.16045	.15697	.15353	.15010	.14671	.14334	
25	.17460	.17099	.16743	.16390	.16039	.15692	.15347	.15005	.14665	.14328	
26	.17453	.17093	.16737	.16384	.16034	.15686	.15341	.14999	.14659	.14323	
27	.17447	.17087	.16731	.16378	.16028	.15680	.15335	.14993	.14654	.14317	
28	.17441	.17082	.16725	.16372	.16022	.15674	.15330	.14988	.14648	.14311	
29	.17435	.17076	.16720	.16366	.16016	.15669	.15324	.14982	.14643	.14306	
30	.17429	.17070	.16714	.16361	.16010	.15663	.15318	.14976	.14637	.14300	
31	.17423	.17064	.16708	.16354	.16005	.15657	.15312	.14971	.14631	.14295	
32	.17417	.17058	.16702	.16349	.15999	.15651	.15307	.14965	.14626	.14289	
33	.17411	.17052	.16696	.16343	.15993	.15646	.15301	.14959	.14620	.14284	
34	.17405	.17046	.16690	.16337	.15987	.15640	.15295	.14954	.14614	.14278	
35	.17399	.17040	.16684	.16331	.15981	.15634	.15290	.14948	.14609	.14272	
36	.17393	.17034	.16678	.16325	.15975	.15628	.15284	.14942	.14603	.14267	
37	.17387	.17028	.16672	.16320	.15970	.15623	.15278	.14937	.14598	.14261	
38	.17381	.17022	.16666	.16314	.15964	.15617	.15272	.14931	.14592	.14256	
39	.17375	.17016	.16660	.16308	.15958	.15611	.15267	.14925	.14586	.14250	
40	.17369	.17010	.16655	.16302	.15952	.15605	.15261	.14919	.14581	.14244	
41	.17363	.17004	.16649	.16296	.15946	.15599	.15255	.14914	.14575	.14239	
42	.17357	.16998	.16643	.16290	.15941	.15594	.15250	.14908	.14569	.14233	
43	.17351	.16992	.16637	.16281	.15935	.15588	.15244	.14902	.14564	.14228	
44	.17345	.16986	.16631	.16279	.15929	.15582	.15238	.14897	.14558	.14222	
45	.17339	.16980	.16625	.16273	.15923	.15576	.15232	.14891	.14553	.14217	
46	.17333	.16974	.16619	.16267	.15917	.15571	.15227	.14886	.14547	.14211	
47	.17327	.16968	.16613	.16261	.15912	.15565	.15221	.14880	.14541	.14205	
48	.17321	.16963	.16607	.16255	.15906	.15559	.15215	.14874	.14536	.14200	
49	.17315	.16957	.16602	.16249	.15900	.15553	.15209	.14869	.14530	.14194	
50	.17309	.16951	.16596	.16243	.15894	.15548	.15204	.14863	.14524	.14189	
51	.17303	.16945	.16590	.16238	.15888	.15542	.15198	.14857	.14519	.14183	
52	.17297	.16939	.16584	.16232	.15883	.15536	.15192	.14852	.14513	.14177	
53	.17291	.16933	.16578	.16226	.15877	.15530	.15187	.14846	.14508	.14172	
54	.17285	.16927	.16572	.16220	.15871	.15525	.15181	.14840	.14502	.14166	
55	.17279	.16921	.16566	.16214	.15865	.15519	.15175	.14835	.14496	.14161	
56	.17273	.16915	.16560	.16208	.15859	.15513	.15170	.14829	.14491	.14155	
57	.17267	.16909	.16554	.16203	.15854	.15507	.15164	.14823	.14485	.14150	
58	.17261	.16903	.16549	.16197	.15848	.15502	.15158	.14818	.14480	.14144	
59	.17255	.16897	.16543	.16191	.15842	.15496	.15153	.14812	.14474	.14138	

2^h or 2^o.

PROP. LOGARITHMS. (r.)

2^h or 2^o.

	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'
0	.14133	.13800	.13470	.13142	.12817	.12494	.12173	.11855	.11539	.11226
1	.14127	.13795	.13464	.13137	.12811	.12489	.12168	.11850	.11534	.11221
2	.14122	.13789	.13459	.13131	.12806	.12483	.12163	.11845	.11529	.11215
3	.14116	.13784	.13453	.13126	.12801	.12478	.12157	.11839	.11524	.11210
4	.14111	.13778	.13448	.13120	.12795	.12472	.12152	.11834	.11518	.11205
5	.14105	.13773	.13442	.13115	.12790	.12467	.12147	.11829	.11513	.11200
6	.14100	.13767	.13437	.13109	.12784	.12462	.12141	.11824	.11508	.11195
7	.14094	.13761	.13431	.13104	.12779	.12456	.12136	.11818	.11503	.11189
8	.14088	.13756	.13426	.13099	.12774	.12451	.12131	.11813	.11497	.11184
9	.14083	.13750	.13421	.13093	.12768	.12446	.12125	.11808	.11492	.11179
10	.14077	.13745	.13415	.13088	.12763	.12440	.12120	.11802	.11487	.11174
11	.14072	.13739	.13410	.13082	.12757	.12435	.12115	.11797	.11482	.11169
12	.14066	.13734	.13404	.13077	.12752	.12430	.12110	.11792	.11476	.11163
13	.14061	.13728	.13399	.13071	.12747	.12424	.12104	.11787	.11471	.11158
14	.14055	.13723	.13393	.13066	.12741	.12419	.12099	.11781	.11466	.11153
15	.14049	.13717	.13388	.13061	.12736	.12414	.12094	.11776	.11461	.11148
16	.14044	.13712	.13382	.13055	.12730	.12408	.12088	.11771	.11456	.11143
17	.14038	.13706	.13377	.13050	.12725	.12403	.12083	.11765	.11450	.11137
18	.14033	.13701	.13371	.13044	.12720	.12397	.12078	.11760	.11445	.11132
19	.14027	.13695	.13366	.13039	.12714	.12392	.12072	.11755	.11440	.11127
20	.14022	.13690	.13360	.13033	.12709	.12387	.12067	.11750	.11435	.11122
21	.14016	.13684	.13355	.13028	.12703	.12381	.12062	.11744	.11429	.11117
22	.14011	.13679	.13349	.13023	.12698	.12376	.12056	.11739	.11424	.11111
23	.14005	.13673	.13344	.13017	.12693	.12371	.12051	.11734	.11419	.11106
24	.13999	.13668	.13338	.13012	.12687	.12365	.12046	.11729	.11414	.11101
25	.13994	.13662	.13333	.13006	.12682	.12360	.12041	.11723	.11408	.11096
26	.13988	.13657	.13328	.13001	.12677	.12355	.12035	.11718	.11403	.11091
27	.13983	.13651	.13322	.12995	.12671	.12349	.12030	.11713	.11398	.11086
28	.13977	.13646	.13317	.12990	.12666	.12344	.12025	.11708	.11393	.11080
29	.13972	.13640	.13311	.12985	.12660	.12339	.12019	.11702	.11387	.11075
30	.13966	.13635	.13306	.12979	.12655	.12333	.12014	.11697	.11382	.11070
31	.13961	.13629	.13300	.12974	.12650	.12328	.12009	.11692	.11377	.11065
32	.13955	.13624	.13295	.12968	.12644	.12323	.12003	.11686	.11372	.11059
33	.13949	.13618	.13289	.12963	.12639	.12317	.11998	.11681	.11367	.11054
34	.13944	.13613	.13284	.12957	.12634	.12312	.11993	.11676	.11361	.11049
35	.13938	.13607	.13278	.12952	.12628	.12307	.11987	.11671	.11356	.11044
36	.13933	.13602	.13273	.12947	.12623	.12301	.11982	.11665	.11351	.11039
37	.13927	.13596	.13267	.12941	.12617	.12296	.11977	.11660	.11346	.11034
38	.13922	.13591	.13262	.12936	.12612	.12291	.11972	.11655	.11340	.11028
39	.13916	.13585	.13257	.12930	.12607	.12285	.11966	.11650	.11335	.11023
40	.13911	.13580	.13251	.12925	.12601	.12280	.11961	.11644	.11330	.11018
41	.13905	.13574	.13246	.12920	.12596	.12275	.11956	.11639	.11325	.11013
42	.13900	.13569	.13240	.12914	.12590	.12269	.11950	.11634	.11320	.11008
43	.13894	.13563	.13235	.12909	.12585	.12264	.11945	.11629	.11314	.11002
44	.13889	.13558	.13229	.12903	.12580	.12259	.11940	.11623	.11309	.10997
45	.13883	.13552	.13224	.12898	.12574	.12253	.11935	.11618	.11304	.10992
46	.13878	.13547	.13218	.12892	.12569	.12248	.11929	.11613	.11299	.10987
47	.13872	.13541	.13213	.12887	.12564	.12243	.11924	.11608	.11294	.10982
48	.13866	.13536	.13207	.12882	.12558	.12237	.11919	.11602	.11288	.10977
49	.13861	.13530	.13202	.12876	.12553	.12232	.11913	.11597	.11283	.10971
50	.13855	.13525	.13197	.12871	.12548	.12227	.11908	.11592	.11278	.10966
51	.13850	.13519	.13191	.12865	.12542	.12221	.11903	.11587	.11273	.10961
52	.13844	.13514	.13186	.12860	.12537	.12216	.11897	.11581	.11267	.10956
53	.13839	.13508	.13180	.12855	.12531	.12211	.11892	.11576	.11262	.10951
54	.13833	.13503	.13175	.12849	.12526	.12205	.11887	.11571	.11257	.10945
55	.13828	.13497	.13169	.12844	.12521	.12200	.11882	.11566	.11252	.10940
56	.13822	.13492	.13164	.12838	.12515	.12195	.11876	.11560	.11247	.10935
57	.13817	.13486	.13158	.12833	.12510	.12189	.11871	.11555	.11241	.10930
58	.13811	.13481	.13153	.12828	.12505	.12184	.11866	.11550	.11236	.10925
59	.13806	.13475	.13148	.12822	.12499	.12179	.11860	.11545	.11231	.10920

2 ^h or 2 ^o .		PROP. LOGARITHMS. (r.)									2 ^h or 2 ^o .
#	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'	
0	.10914	.10605	.10298	.09994	.09691	.09390	.09092	.08796	.08501	.08209	
1	.10909	.10600	.10293	.09989	.09686	.09385	.09087	.08791	.08496	.08204	
2	.10904	.10595	.10288	.09984	.09681	.09380	.09082	.08786	.08491	.08199	
3	.10899	.10590	.10283	.09978	.09676	.09375	.09077	.08781	.08486	.08194	
4	.10894	.10585	.10278	.09973	.09671	.09370	.09072	.08776	.08482	.08189	
5	.10889	.10580	.10273	.09968	.09666	.09365	.09067	.08771	.08477	.08184	
6	.10883	.10575	.10268	.09963	.09661	.09360	.09062	.08766	.08472	.08179	
7	.10878	.10569	.10263	.09958	.09656	.09356	.09057	.08761	.08467	.08175	
8	.10873	.10564	.10258	.09953	.09651	.09351	.09052	.08756	.08462	.08170	
9	.10868	.10559	.10253	.09948	.09646	.09346	.09047	.08751	.08457	.08165	
10	.10863	.10554	.10247	.09943	.09641	.09341	.09042	.08746	.08452	.08160	
11	.10858	.10549	.10242	.09938	.09636	.09336	.09037	.08741	.08447	.08155	
12	.10852	.10544	.10237	.09933	.09631	.09331	.09033	.08736	.08442	.08150	
13	.10847	.10539	.10232	.09928	.09626	.09326	.09028	.08732	.08438	.08146	
14	.10842	.10534	.10227	.09923	.09621	.09321	.09023	.08727	.08433	.08141	
15	.10837	.10528	.10222	.09918	.09616	.09316	.09018	.08722	.08428	.08136	
16	.10832	.10523	.10217	.09913	.09611	.09311	.09013	.08717	.08423	.08131	
17	.10827	.10518	.10212	.09908	.09606	.09306	.09008	.08712	.08418	.08126	
18	.10821	.10513	.10207	.09903	.09601	.09301	.09003	.08707	.08413	.08121	
19	.10816	.10508	.10202	.09898	.09596	.09296	.08998	.08702	.08408	.08116	
20	.10811	.10503	.10197	.09893	.09591	.09291	.08993	.08697	.08403	.08112	
21	.10806	.10498	.10192	.09887	.09586	.09286	.08988	.08692	.08398	.08107	
22	.10801	.10493	.10186	.09882	.09581	.09281	.08983	.08687	.08394	.08102	
23	.10796	.10487	.10181	.09877	.09576	.09276	.08978	.08682	.08389	.08097	
24	.10791	.10482	.10176	.09872	.09571	.09271	.08973	.08678	.08384	.08092	
25	.10785	.10477	.10171	.09867	.09566	.09266	.08968	.08673	.08379	.08087	
26	.10780	.10472	.10166	.09862	.09561	.09261	.08963	.08668	.08374	.08083	
27	.10775	.10467	.10161	.09857	.09556	.09256	.08958	.08663	.08369	.08078	
28	.10770	.10462	.10156	.09852	.09550	.09251	.08953	.08658	.08364	.08073	
29	.10765	.10457	.10151	.09847	.09545	.09246	.08948	.08653	.08359	.08068	
30	.10760	.10452	.10146	.09842	.09540	.09241	.08943	.08648	.08355	.08063	
31	.10754	.10447	.10141	.09837	.09535	.09236	.08939	.08643	.08350	.08058	
32	.10749	.10441	.10136	.09832	.09530	.09231	.08934	.08638	.08345	.08053	
33	.10744	.10436	.10131	.09827	.09525	.09226	.08929	.08633	.08340	.08049	
34	.10739	.10431	.10126	.09822	.09520	.09221	.08924	.08628	.08335	.08044	
35	.10734	.10426	.10120	.09817	.09515	.09216	.08919	.08624	.08330	.08039	
36	.10729	.10421	.10115	.09812	.09510	.09211	.08914	.08619	.08325	.08034	
37	.10724	.10416	.10110	.09807	.09505	.09206	.08909	.08614	.08320	.08029	
38	.10718	.10411	.10105	.09802	.09500	.09201	.08904	.08609	.08316	.08024	
39	.10713	.10406	.10100	.09797	.09495	.09196	.08899	.08604	.08311	.08020	
40	.10708	.10400	.10095	.09792	.09490	.09191	.08894	.08599	.08306	.08015	
41	.10703	.10395	.10090	.09787	.09485	.09186	.08889	.08594	.08301	.08010	
42	.10698	.10390	.10085	.09782	.09480	.09181	.08884	.08589	.08296	.08005	
43	.10693	.10385	.10080	.09777	.09475	.09176	.08879	.08584	.08291	.08000	
44	.10688	.10380	.10075	.09772	.09470	.09171	.08874	.08579	.08286	.07995	
45	.10682	.10375	.10070	.09766	.09465	.09166	.08869	.08575	.08282	.07991	
46	.10677	.10370	.10065	.09761	.09460	.09161	.08865	.08570	.08277	.07986	
47	.10672	.10365	.10059	.09756	.09455	.09156	.08860	.08565	.08272	.07981	
48	.10667	.10360	.10054	.09751	.09450	.09151	.08855	.08560	.08267	.07976	
49	.10662	.10355	.10049	.09746	.09445	.09147	.08850	.08555	.08262	.07971	
50	.10657	.10349	.10044	.09741	.09440	.09142	.08845	.08550	.08257	.07966	
51	.10652	.10344	.10039	.09736	.09435	.09137	.08840	.08545	.08252	.07962	
52	.10646	.10339	.10034	.09731	.09430	.09132	.08835	.08540	.08248	.07957	
53	.10641	.10334	.10029	.09726	.09425	.09127	.08830	.08535	.08243	.07952	
54	.10636	.10329	.10024	.09721	.09420	.09122	.08825	.08530	.08238	.07947	
55	.10631	.10324	.10019	.09716	.09415	.09117	.08820	.08526	.08233	.07942	
56	.10626	.10319	.10014	.09711	.09410	.09112	.08815	.08521	.08228	.07937	
57	.10621	.10314	.10009	.09706	.09405	.09107	.08810	.08516	.08223	.07933	
58	.10616	.10309	.10004	.09701	.09400	.09102	.08805	.08511	.08218	.07928	
59	.10610	.10304	.09999	.09696	.09395	.09097	.08800	.08506	.08213	.07923	

2 ^h or 2 ^o	PROP. LOGARITHMS. (r.)										2 ^h or 2 ^o
1	30'	31'	32'	33'	34'	35'	36'	37'	38'	39'	
0	.07918	.07630	.07343	.07058	.06775	.06494	.06215	.05937	.05662	.05388	
1	.07913	.07625	.07338	.07053	.06770	.06489	.06210	.05933	.05657	.05383	
2	.07908	.07620	.07333	.07049	.06766	.06485	.06206	.05928	.05652	.05378	
3	.07904	.07615	.07329	.07044	.06761	.06480	.06201	.05923	.05648	.05374	
4	.07899	.07610	.07324	.07039	.06756	.06475	.06196	.05919	.05643	.05369	
5	.07894	.07606	.07319	.07034	.06752	.06471	.06192	.05914	.05639	.05365	
6	.07889	.07601	.07314	.07030	.06747	.06466	.06187	.05910	.05634	.05360	
7	.07884	.07596	.07310	.07025	.06742	.06461	.06182	.05905	.05629	.05356	
8	.07880	.07591	.07305	.07020	.06738	.06457	.06178	.05900	.05625	.05351	
9	.07875	.07586	.07300	.07016	.06733	.06452	.06173	.05896	.05620	.05347	
10	.07870	.07582	.07295	.07011	.06728	.06447	.06168	.05891	.05616	.05342	
11	.07865	.07577	.07291	.07006	.06724	.06443	.06164	.05887	.05611	.05337	
12	.07860	.07572	.07286	.07001	.06719	.06438	.06159	.05882	.05607	.05333	
13	.07855	.07567	.07281	.06997	.06714	.06433	.06155	.05877	.05602	.05328	
14	.07851	.07562	.07276	.06992	.06709	.06429	.06150	.05873	.05597	.05324	
15	.07846	.07558	.07272	.06987	.06705	.06424	.06145	.05868	.05593	.05319	
16	.07841	.07553	.07267	.06982	.06700	.06419	.06141	.05864	.05588	.05315	
17	.07836	.07548	.07262	.06978	.06695	.06415	.06136	.05859	.05584	.05310	
18	.07831	.07543	.07257	.06973	.06691	.06410	.06131	.05854	.05579	.05306	
19	.07827	.07539	.07253	.06968	.06686	.06405	.06127	.05850	.05575	.05301	
20	.07822	.07534	.07248	.06964	.06681	.06401	.06122	.05845	.05570	.05297	
21	.07817	.07529	.07243	.06959	.06677	.06396	.06117	.05841	.05565	.05292	
22	.07812	.07524	.07238	.06954	.06672	.06391	.06113	.05836	.05561	.05288	
23	.07807	.07519	.07234	.06949	.06667	.06387	.06108	.05831	.05556	.05283	
24	.07802	.07515	.07229	.06945	.06663	.06382	.06104	.05827	.05552	.05278	
25	.07798	.07510	.07224	.06940	.06658	.06377	.06099	.05822	.05547	.05274	
26	.07793	.07505	.07219	.06935	.06653	.06373	.06094	.05818	.05543	.05269	
27	.07788	.07500	.07215	.06931	.06648	.06368	.06090	.05813	.05538	.05265	
28	.07783	.07496	.07210	.06926	.06644	.06364	.06085	.05808	.05533	.05260	
29	.07778	.07491	.07205	.06921	.06639	.06359	.06080	.05804	.05529	.05256	
30	.07774	.07486	.07200	.06916	.06634	.06354	.06076	.05799	.05524	.05251	
31	.07769	.07481	.07196	.06912	.06630	.06350	.06071	.05795	.05520	.05247	
32	.07764	.07476	.07191	.06907	.06625	.06345	.06067	.05790	.05515	.05242	
33	.07759	.07472	.07186	.06902	.06620	.06340	.06062	.05785	.05511	.05238	
34	.07754	.07467	.07181	.06898	.06616	.06336	.06057	.05781	.05506	.05233	
35	.07750	.07462	.07177	.06893	.06611	.06331	.06053	.05776	.05501	.05229	
36	.07745	.07457	.07172	.06888	.06606	.06326	.06048	.05772	.05497	.05224	
37	.07740	.07453	.07167	.06883	.06602	.06322	.06043	.05767	.05492	.05219	
38	.07735	.07448	.07162	.06879	.06597	.06317	.06039	.05762	.05488	.05215	
39	.07730	.07443	.07158	.06874	.06592	.06312	.06034	.05758	.05483	.05210	
40	.07726	.07438	.07153	.06869	.06588	.06308	.06030	.05753	.05479	.05206	
41	.07721	.07433	.07148	.06865	.06583	.06303	.06025	.05749	.05474	.05201	
42	.07716	.07429	.07143	.06860	.06578	.06298	.06020	.05744	.05470	.05197	
43	.07711	.07424	.07139	.06855	.06574	.06294	.06016	.05739	.05465	.05192	
44	.07706	.07419	.07134	.06850	.06569	.06289	.06011	.05735	.05460	.05188	
45	.07702	.07414	.07129	.06846	.06564	.06284	.06006	.05730	.05456	.05183	
46	.07697	.07410	.07124	.06841	.06559	.06280	.06002	.05726	.05451	.05179	
47	.07692	.07405	.07120	.06836	.06555	.06275	.05997	.05721	.05447	.05174	
48	.07687	.07400	.07115	.06832	.06550	.06271	.05993	.05717	.05442	.05170	
49	.07682	.07395	.07110	.06827	.06545	.06266	.05988	.05712	.05438	.05165	
50	.07678	.07391	.07105	.06822	.06541	.06261	.05983	.05707	.05433	.05161	
51	.07673	.07386	.07101	.06817	.06536	.06257	.05979	.05703	.05429	.05156	
52	.07668	.07381	.07096	.06813	.06531	.06252	.05974	.05698	.05424	.05151	
53	.07663	.07376	.07091	.06808	.06527	.06247	.05970	.05694	.05419	.05147	
54	.07658	.07371	.07087	.06803	.06522	.06243	.05965	.05689	.05415	.05142	
55	.07654	.07367	.07082	.06799	.06517	.06238	.05960	.05684	.05410	.05138	
56	.07649	.07362	.07077	.06794	.06513	.06233	.05956	.05680	.05406	.05133	
57	.07644	.07357	.07072	.06789	.06508	.06229	.05951	.05675	.05401	.05129	
58	.07639	.07352	.07068	.06784	.06503	.06224	.05947	.05671	.05397	.05124	
59	.07634	.07348	.07063	.06780	.06499	.06219	.05942	.05666	.05392	.05120	

2 ^a or 2 ^o .		PROP. LOGARITHMS. (r.)									2 ^a or 2 ^o .
"	40'	41'	42'	43'	44'	45'	46'	47'	48'	49'	
0	.05115	.04845	.04576	.04308	.04043	.03779	.03516	.03256	.02996	.02739	
1	.05111	.04840	.04571	.04304	.04038	.03774	.03512	.03251	.02992	.02734	
2	.05106	.04836	.04567	.04300	.04034	.03770	.03508	.03247	.02988	.02730	
3	.05102	.04831	.04562	.04295	.04030	.03766	.03503	.03243	.02983	.02726	
4	.05097	.04827	.04558	.04291	.04025	.03761	.03499	.03238	.02979	.02721	
5	.05093	.04822	.04553	.04286	.04021	.03757	.03495	.03234	.02975	.02717	
6	.05088	.04818	.04549	.04282	.04016	.03753	.03490	.03230	.02970	.02713	
7	.05084	.04813	.04544	.04277	.04012	.03748	.03486	.03225	.02966	.02709	
8	.05079	.04809	.04540	.04273	.04008	.03744	.03482	.03221	.02962	.02704	
9	.05075	.04804	.04536	.04269	.04003	.03739	.03477	.03217	.02958	.02700	
10	.05070	.04800	.04531	.04264	.03999	.03735	.03473	.03212	.02953	.02696	
11	.05066	.04795	.04527	.04260	.03994	.03731	.03469	.03208	.02949	.02691	
12	.05061	.04791	.04522	.04255	.03990	.03726	.03464	.03204	.02945	.02687	
13	.05056	.04786	.04518	.04251	.03986	.03722	.03460	.03199	.02940	.02683	
14	.05052	.04782	.04513	.04246	.03981	.03717	.03455	.03195	.02936	.02679	
15	.05047	.04777	.04509	.04242	.03977	.03713	.03451	.03191	.02932	.02674	
16	.05043	.04773	.04504	.04237	.03972	.03709	.03447	.03186	.02927	.02670	
17	.05038	.04768	.04500	.04233	.03968	.03704	.03442	.03182	.02923	.02666	
18	.05034	.04764	.04495	.04229	.03963	.03700	.03438	.03178	.02919	.02662	
19	.05029	.04759	.04491	.04224	.03959	.03696	.03434	.03173	.02915	.02657	
20	.05025	.04755	.04486	.04220	.03955	.03691	.03429	.03169	.02910	.02653	
21	.05020	.04750	.04482	.04215	.03950	.03687	.03425	.03165	.02906	.02649	
22	.05016	.04746	.04478	.04211	.03946	.03682	.03421	.03160	.02902	.02644	
23	.05011	.04741	.04473	.04206	.03941	.03678	.03416	.03156	.02897	.02640	
24	.05007	.04737	.04469	.04202	.03937	.03674	.03412	.03152	.02893	.02636	
25	.05002	.04732	.04464	.04198	.03933	.03669	.03408	.03147	.02889	.02632	
26	.04998	.04728	.04460	.04193	.03928	.03665	.03403	.03143	.02884	.02627	
27	.04993	.04723	.04455	.04189	.03924	.03661	.03399	.03139	.02880	.02623	
28	.04989	.04719	.04451	.04184	.03919	.03656	.03395	.03134	.02876	.02619	
29	.04984	.04714	.04446	.04180	.03915	.03652	.03390	.03130	.02872	.02615	
30	.04980	.04710	.04442	.04175	.03911	.03647	.03386	.03126	.02867	.02610	
31	.04975	.04706	.04437	.04171	.03906	.03643	.03381	.03121	.02863	.02606	
32	.04971	.04701	.04433	.04167	.03902	.03639	.03377	.03117	.02859	.02602	
33	.04966	.04697	.04429	.04162	.03897	.03634	.03373	.03113	.02854	.02598	
34	.04962	.04692	.04424	.04158	.03893	.03630	.03368	.03108	.02850	.02593	
35	.04957	.04688	.04420	.04153	.03889	.03626	.03364	.03104	.02846	.02589	
36	.04953	.04683	.04415	.04149	.03884	.03621	.03360	.03100	.02841	.02585	
37	.04948	.04679	.04411	.04144	.03880	.03617	.03355	.03096	.02837	.02580	
38	.04944	.04674	.04406	.04140	.03875	.03612	.03351	.03091	.02833	.02576	
39	.04939	.04670	.04402	.04136	.03871	.03608	.03347	.03087	.02829	.02572	
40	.04935	.04665	.04397	.04131	.03867	.03604	.03342	.03083	.02824	.02568	
41	.04930	.04661	.04393	.04127	.03862	.03599	.03338	.03078	.02820	.02563	
42	.04926	.04656	.04388	.04122	.03858	.03595	.03334	.03074	.02816	.02559	
43	.04921	.04652	.04384	.04118	.03853	.03591	.03329	.03070	.02811	.02555	
44	.04917	.04647	.04380	.04114	.03849	.03586	.03325	.03065	.02807	.02551	
45	.04912	.04643	.04375	.04109	.03845	.03582	.03321	.03061	.02803	.02546	
46	.04908	.04638	.04371	.04105	.03840	.03578	.03316	.03057	.02799	.02542	
47	.04903	.04634	.04366	.04100	.03836	.03573	.03312	.03052	.02794	.02538	
48	.04899	.04629	.04362	.04096	.03832	.03569	.03308	.03048	.02790	.02533	
49	.04894	.04625	.04357	.04091	.03827	.03564	.03303	.03044	.02786	.02529	
50	.04890	.04620	.04353	.04087	.03823	.03560	.03299	.03039	.02781	.02525	
51	.04885	.04616	.04348	.04083	.03818	.03556	.03295	.03035	.02777	.02521	
52	.04881	.04612	.04344	.04078	.03814	.03551	.03290	.03031	.02773	.02516	
53	.04876	.04607	.04340	.04074	.03810	.03547	.03286	.03026	.02769	.02512	
54	.04872	.04603	.04335	.04069	.03805	.03543	.03282	.03022	.02764	.02508	
55	.04867	.04598	.04331	.04065	.03801	.03538	.03277	.03018	.02760	.02504	
56	.04863	.04594	.04326	.04061	.03796	.03534	.03273	.03014	.02756	.02499	
57	.04858	.04589	.04322	.04056	.03792	.03530	.03269	.03009	.02751	.02495	
58	.04854	.04585	.04317	.04052	.03788	.03525	.03264	.03005	.02747	.02491	
59	.04849	.04580	.04313	.04047	.03783	.03521	.03260	.03001	.02743	.02487	

2 ^h or 2 ^o .		PROP. LOGARITHMS. (r.)									2 ^h or 2 ^o .
#	50'	51'	52'	53'	54'	55'	56'	57'	58'	59'	
0	.02482	.02228	.01974	.01723	.01472	.01223	.00976	.00730	.00485	.00242	
1	.02478	.02223	.01970	.01718	.01468	.01219	.00972	.00726	.00481	.00238	
2	.02474	.02219	.01966	.01714	.01464	.01215	.00968	.00722	.00477	.00234	
3	.02470	.02215	.01962	.01710	.01460	.01211	.00964	.00718	.00473	.00230	
4	.02465	.02211	.01958	.01706	.01456	.01207	.00960	.00714	.00469	.00226	
5	.02461	.02206	.01953	.01702	.01452	.01203	.00955	.00709	.00465	.00222	
6	.02457	.02202	.01949	.01698	.01447	.01199	.00951	.00705	.00461	.00218	
7	.02453	.02198	.01945	.01693	.01443	.01195	.00947	.00701	.00457	.00214	
8	.02448	.02194	.01941	.01689	.01439	.01190	.00943	.00697	.00453	.00210	
9	.02444	.02190	.01937	.01685	.01435	.01186	.00939	.00693	.00449	.00206	
10	.02440	.02185	.01932	.01681	.01431	.01182	.00935	.00689	.00445	.00202	
11	.02436	.02181	.01928	.01677	.01427	.01178	.00931	.00685	.00441	.00197	
12	.02431	.02177	.01924	.01672	.01422	.01174	.00927	.00681	.00436	.00193	
13	.02427	.02173	.01920	.01668	.01418	.01170	.00923	.00677	.00432	.00189	
14	.02423	.02168	.01916	.01664	.01414	.01166	.00918	.00673	.00428	.00185	
15	.02419	.02164	.01911	.01660	.01410	.01161	.00914	.00669	.00424	.00181	
16	.02414	.02160	.01907	.01656	.01406	.01157	.00910	.00665	.00420	.00177	
17	.02410	.02156	.01903	.01652	.01402	.01153	.00906	.00660	.00416	.00173	
18	.02406	.02152	.01899	.01647	.01398	.01149	.00902	.00656	.00412	.00169	
19	.02402	.02147	.01895	.01643	.01393	.01145	.00898	.00652	.00408	.00165	
20	.02397	.02143	.01890	.01639	.01389	.01141	.00894	.00648	.00404	.00161	
21	.02393	.02139	.01886	.01635	.01385	.01137	.00890	.00644	.00400	.00157	
22	.02389	.02135	.01882	.01631	.01381	.01133	.00886	.00640	.00396	.00153	
23	.02385	.02130	.01878	.01627	.01377	.01128	.00882	.00636	.00392	.00149	
24	.02380	.02126	.01874	.01622	.01373	.01124	.00877	.00632	.00388	.00145	
25	.02376	.02122	.01869	.01618	.01368	.01120	.00873	.00628	.00384	.00141	
26	.02372	.02118	.01865	.01614	.01364	.01116	.00869	.00624	.00380	.00137	
27	.02368	.02114	.01861	.01610	.01360	.01112	.00865	.00620	.00376	.00133	
28	.02363	.02109	.01857	.01606	.01356	.01108	.00861	.00616	.00372	.00129	
29	.02359	.02105	.01853	.01601	.01352	.01104	.00857	.00611	.00367	.00125	
30	.02355	.02101	.01848	.01597	.01348	.01100	.00853	.00607	.00363	.00121	
31	.02351	.02097	.01844	.01593	.01344	.01095	.00849	.00603	.00359	.00117	
32	.02346	.02092	.01840	.01589	.01339	.01091	.00845	.00599	.00355	.00113	
33	.02342	.02088	.01836	.01585	.01335	.01087	.00840	.00595	.00351	.00109	
34	.02338	.02084	.01832	.01581	.01331	.01083	.00836	.00591	.00347	.00105	
35	.02334	.02080	.01827	.01576	.01327	.01079	.00832	.00587	.00343	.00101	
36	.02329	.02076	.01823	.01572	.01323	.01075	.00828	.00583	.00339	.00097	
37	.02325	.02071	.01819	.01568	.01319	.01071	.00824	.00579	.00335	.00093	
38	.02321	.02067	.01815	.01564	.01315	.01067	.00820	.00575	.00331	.00089	
39	.02317	.02063	.01811	.01560	.01310	.01062	.00816	.00571	.00327	.00085	
40	.02312	.02059	.01806	.01556	.01306	.01058	.00812	.00567	.00323	.00080	
41	.02308	.02054	.01802	.01551	.01302	.01054	.00808	.00563	.00319	.00076	
42	.02304	.02050	.01798	.01547	.01298	.01050	.00804	.00559	.00315	.00072	
43	.02300	.02046	.01794	.01543	.01294	.01046	.00799	.00554	.00311	.00068	
44	.02295	.02042	.01790	.01539	.01290	.01042	.00795	.00550	.00307	.00064	
45	.02291	.02038	.01785	.01535	.01286	.01038	.00791	.00546	.00303	.00060	
46	.02287	.02033	.01781	.01531	.01281	.01034	.00787	.00542	.00299	.00056	
47	.02283	.02029	.01777	.01526	.01277	.01029	.00783	.00538	.00295	.00052	
48	.02278	.02025	.01773	.01522	.01273	.01025	.00779	.00534	.00290	.00048	
49	.02274	.02021	.01769	.01518	.01269	.01021	.00775	.00530	.00286	.00044	
50	.02270	.02017	.01764	.01514	.01265	.01017	.00771	.00526	.00282	.00040	
51	.02266	.02012	.01760	.01510	.01261	.01013	.00767	.00522	.00278	.00036	
52	.02262	.02008	.01756	.01506	.01257	.01009	.00763	.00518	.00274	.00032	
53	.02257	.02004	.01752	.01501	.01252	.01005	.00759	.00514	.00270	.00028	
54	.02253	.02000	.01748	.01497	.01248	.01001	.00754	.00510	.00266	.00024	
55	.02249	.01995	.01744	.01493	.01244	.00997	.00750	.00506	.00262	.00020	
56	.02245	.01991	.01739	.01489	.01240	.00992	.00746	.00502	.00258	.00016	
57	.02240	.01987	.01735	.01485	.01236	.00988	.00742	.00497	.00254	.00012	
58	.02236	.01983	.01731	.01481	.01232	.00984	.00738	.00493	.00250	.00008	
59	.02232	.01979	.01727	.01476	.01228	.00980	.00734	.00489	.00246	.00004	

LOG. SINE TO SECONDS. (L.)

"	0° 0'	0° 1'	0° 2'	0° 3'	0° 4'	0° 5'	0° 6'	0° 7'	0° 8'	0° 9'	"
0		6.463726	6.764756	6.940847	7.065786	7.162696	7.241877	7.308824	7.366816	7.417968	60
1	4.685575	6.470905	6.768360	6.943253	7.067592	7.164141	7.243082	7.309857	7.367719	7.418772	59
2	4.986605	6.477966	6.771935	6.945646	7.069390	7.165582	7.244283	7.310887	7.368621	7.419574	58
3	5.162696	6.484915	6.775480	6.948026	7.071181	7.167017	7.245481	7.311915	7.369522	7.420374	57
4	5.287635	6.491755	6.778996	6.950393	7.072965	7.168448	7.246576	7.312940	7.370420	7.421173	56
5	5.384545	6.498488	6.782485	6.952746	7.074741	7.169874	7.247867	7.313963	7.371316	7.421971	55
6	5.463726	6.505119	6.785945	6.955088	7.076510	7.171296	7.249036	7.314984	7.372211	7.422767	54
7	5.530673	6.511650	6.789379	6.957416	7.078272	7.172713	7.250241	7.316002	7.373103	7.423562	53
8	5.588665	6.518084	6.792785	6.959733	7.080026	7.174125	7.251422	7.317018	7.373994	7.424355	52
9	5.639817	6.524424	6.796164	6.962037	7.081774	7.175533	7.252601	7.318032	7.374883	7.425147	51
10	5.685575	6.530673	6.799518	6.964328	7.083515	7.176936	7.253776	7.319043	7.375770	7.425937	50
11	5.726968	6.536833	6.802846	6.966608	7.085248	7.178335	7.254948	7.320052	7.376656	7.426726	49
12	5.764756	6.542907	6.806149	6.968876	7.086975	7.179729	7.256118	7.321058	7.377540	7.427513	48
13	5.799518	6.548898	6.809426	6.971132	7.088695	7.181119	7.257283	7.322062	7.378421	7.428299	47
14	5.831703	6.554807	6.812680	6.973376	7.090408	7.182504	7.258446	7.323064	7.379301	7.429084	46
15	5.861666	6.560636	6.815909	6.975609	7.092115	7.183885	7.259606	7.324064	7.380180	7.429867	45
16	5.889695	6.566388	6.819114	6.977831	7.093815	7.185262	7.260762	7.325061	7.381056	7.430649	44
17	5.916024	6.572066	6.822295	6.980041	7.095508	7.186634	7.261916	7.326056	7.381931	7.431429	43
18	5.940847	6.577669	6.825454	6.982240	7.097194	7.188002	7.263066	7.327049	7.382804	7.432208	42
19	5.964328	6.583202	6.828590	6.984428	7.098874	7.189365	7.264214	7.328039	7.383675	7.432986	41
20	5.986605	6.588665	6.831703	6.986605	7.100548	7.190725	7.265358	7.329027	7.384544	7.433762	40
21	6.007794	6.594060	6.834794	6.988771	7.102215	7.192080	7.266500	7.330013	7.385412	7.434537	39
22	6.027997	6.599389	6.837863	6.990926	7.103876	7.193431	7.267638	7.330997	7.386278	7.435311	38
23	6.047303	6.604653	6.840911	6.993071	7.105530	7.194777	7.268773	7.331978	7.387142	7.436083	37
24	6.065786	6.609854	6.843937	6.995205	7.107179	7.196120	7.269906	7.332957	7.388005	7.436853	36
25	6.083515	6.614994	6.846943	6.997329	7.108821	7.197458	7.271035	7.333934	7.388866	7.437623	35
26	6.100548	6.620073	6.849928	6.999442	7.110456	7.198792	7.272162	7.334909	7.389725	7.438391	34
27	6.116939	6.625094	6.852892	7.001545	7.112086	7.200122	7.273286	7.335882	7.390582	7.439157	33
28	6.132733	6.630057	6.855836	7.003638	7.113709	7.201448	7.274406	7.336852	7.391438	7.439923	32
29	6.147973	6.634965	6.858761	7.005721	7.115327	7.202771	7.275524	7.337821	7.392292	7.440687	31
30	6.162696	6.639817	6.861666	7.007794	7.116938	7.204089	7.276639	7.338787	7.393145	7.441449	30
31	6.176937	6.644616	6.864552	7.009857	7.118544	7.205403	7.277751	7.339751	7.393995	7.442210	29
32	6.190725	6.649363	6.867418	7.011911	7.120144	7.206713	7.278861	7.340713	7.394844	7.442970	28
33	6.204089	6.654058	6.870266	7.013954	7.121737	7.208019	7.279967	7.341673	7.395692	7.443729	27
34	6.217054	6.658703	6.873095	7.015989	7.123325	7.209321	7.281071	7.342630	7.396537	7.444486	26
35	6.229643	6.663298	6.875906	7.018013	7.124907	7.210619	7.282172	7.343586	7.397382	7.445242	25
36	6.241877	6.667846	6.878699	7.020028	7.126484	7.211914	7.283270	7.344539	7.398224	7.445997	24
37	6.253777	6.672347	6.881474	7.022034	7.128054	7.213205	7.284365	7.345491	7.399065	7.446750	23
38	6.265358	6.676801	6.884232	7.024031	7.129619	7.214491	7.285458	7.346440	7.399904	7.447502	22
39	6.276639	6.681210	6.886972	7.026019	7.131179	7.215774	7.286547	7.347387	7.400742	7.448253	21
40	6.287635	6.685575	6.889695	7.027997	7.132733	7.217054	7.287635	7.348332	7.401578	7.449002	20
41	6.298359	6.689896	6.892401	7.029967	7.134281	7.218329	7.288719	7.349275	7.402412	7.449750	19
42	6.308824	6.694175	6.895090	7.031928	7.135824	7.219601	7.289801	7.350216	7.403245	7.450497	18
43	6.319043	6.698412	6.897762	7.033880	7.137361	7.220869	7.290880	7.351155	7.404076	7.451243	17
44	6.329027	6.702608	6.900419	7.035823	7.138893	7.222133	7.291956	7.352092	7.404906	7.451987	16
45	6.338787	6.706764	6.903059	7.037757	7.140420	7.223394	7.293030	7.353027	7.405734	7.452730	15
46	6.348333	6.710881	6.905683	7.039683	7.141941	7.224651	7.294101	7.353960	7.406560	7.453472	14
47	6.357673	6.714959	6.908291	7.041601	7.143457	7.225904	7.295169	7.354891	7.407385	7.454212	13
48	6.366816	6.718999	6.910884	7.043510	7.144967	7.227154	7.296235	7.355820	7.408208	7.454952	12
49	6.375771	6.723001	6.913461	7.045410	7.146473	7.228400	7.297298	7.356747	7.409030	7.455690	11
50	6.384545	6.726967	6.916024	7.047303	7.147973	7.229643	7.298358	7.357672	7.409850	7.456426	10
51	6.393145	6.730898	6.918571	7.049187	7.149468	7.230882	7.299416	7.358595	7.410669	7.457162	9
52	6.401578	6.734793	6.921103	7.051063	7.150958	7.232117	7.300472	7.359516	7.411486	7.457896	8
53	6.409851	6.738653	6.923621	7.052931	7.152442	7.233349	7.301525	7.360436	7.412302	7.458629	7
54	6.417969	6.742480	6.926124	7.054791	7.153922	7.234578	7.302575	7.361353	7.413116	7.459361	6
55	6.425938	6.746273	6.928613	7.056643	7.155397	7.235803	7.303623	7.362268	7.413928	7.460091	5
56	6.433763	6.750033	6.931087	7.058487	7.156866	7.237025	7.304668	7.363181	7.414739	7.460822	4
57	6.441450	6.753761	6.933548	7.060323	7.158331	7.238243	7.305711	7.364093	7.415549	7.461549	3
58	6.449003	6.757457	6.935995	7.062152	7.159791	7.239458	7.306751	7.365002	7.416357	7.462275	2
59	6.456427	6.761122	6.938428	7.063973	7.161246	7.240669	7.307789	7.365910	7.417163	7.463003	1
60	6.463726	6.764756	6.940847	7.065786	7.162696	7.241877	7.308824	7.366816	7.417968	7.463725	0
"	89° 59'	89° 58'	89° 57'	89° 56'	89° 55'	89° 54'	89° 53'	89° 52'	89° 51'	89° 50'	"

LOG. COSINE TO SECONDS.

LOG. SINE TO SECONDS. (s.)											
n	0° 10'	0° 11'	0° 12'	0° 13'	0° 14'	0° 15'	0° 16'	0° 17'	0° 18'	0° 19'	n
0	7.463725	7.505118	7.542906	7.577668	7.609853	7.639816	7.667844	7.694173	7.718997	7.742477	60
1	7.464449	7.505776	7.543509	7.578225	7.610370	7.640298	7.668297	7.694599	7.719399	7.742858	59
2	7.465171	7.506432	7.544111	7.578781	7.610886	7.640780	7.668748	7.695024	7.719800	7.743239	58
3	7.465892	7.507088	7.544712	7.579336	7.611401	7.641261	7.669200	7.695449	7.720201	7.743619	57
4	7.466611	7.507742	7.545312	7.579890	7.611916	7.641742	7.669650	7.695873	7.720602	7.743999	56
5	7.467330	7.508396	7.545912	7.580443	7.612430	7.642222	7.670101	7.696297	7.721003	7.744378	55
6	7.468047	7.509048	7.546511	7.580996	7.612944	7.642702	7.670550	7.696720	7.721403	7.744757	54
7	7.468763	7.509700	7.547108	7.581548	7.613457	7.643181	7.671000	7.697143	7.721802	7.745136	53
8	7.469478	7.510351	7.547705	7.582100	7.613969	7.643659	7.671449	7.697566	7.722202	7.745514	52
9	7.470191	7.511000	7.548301	7.582651	7.614481	7.644137	7.671897	7.697988	7.722601	7.745893	51
10	7.470904	7.511649	7.548897	7.583201	7.614993	7.644615	7.672345	7.698410	7.722999	7.746270	50
11	7.471615	7.512297	7.549491	7.583750	7.615503	7.645092	7.672792	7.698832	7.723398	7.746648	49
12	7.472326	7.512943	7.550085	7.584299	7.616013	7.645568	7.673239	7.699253	7.723795	7.747025	48
13	7.473035	7.513589	7.550678	7.584847	7.616523	7.646044	7.673686	7.699673	7.724193	7.747402	47
14	7.473743	7.514234	7.551270	7.585394	7.617031	7.646520	7.674132	7.700094	7.724590	7.747778	46
15	7.474449	7.514878	7.551861	7.585941	7.617540	7.646994	7.674578	7.700513	7.724987	7.748155	45
16	7.475155	7.515521	7.552452	7.586487	7.618047	7.647469	7.675023	7.700933	7.725383	7.748530	44
17	7.475859	7.516163	7.553041	7.587032	7.618554	7.647943	7.675468	7.701352	7.725779	7.748906	43
18	7.476563	7.516804	7.553630	7.587577	7.619061	7.648416	7.675912	7.701770	7.726175	7.749281	42
19	7.477265	7.517444	7.554218	7.588121	7.619567	7.648889	7.676356	7.702189	7.726570	7.749656	41
20	7.477966	7.518083	7.554806	7.588664	7.620072	7.649361	7.676799	7.702606	7.726965	7.750031	40
21	7.478666	7.518721	7.555392	7.589206	7.620577	7.649833	7.677242	7.703024	7.727360	7.750405	39
22	7.479365	7.519358	7.555978	7.589748	7.621081	7.650304	7.677685	7.703441	7.727754	7.750779	38
23	7.480062	7.519995	7.556563	7.590289	7.621584	7.650775	7.678127	7.703857	7.728148	7.751152	37
24	7.480759	7.520630	7.557147	7.590830	7.622087	7.651245	7.678568	7.704273	7.728542	7.751525	36
25	7.481454	7.521265	7.557730	7.591370	7.622590	7.651715	7.679009	7.704689	7.728935	7.751898	35
26	7.482148	7.521898	7.558313	7.591909	7.623091	7.652184	7.679450	7.705105	7.729328	7.752271	34
27	7.482842	7.522531	7.558894	7.592447	7.623593	7.652653	7.679890	7.705520	7.729720	7.752643	33
28	7.483534	7.523162	7.559475	7.592985	7.624093	7.653121	7.680330	7.705934	7.730112	7.753015	32
29	7.484225	7.523793	7.560056	7.593522	7.624593	7.653589	7.680769	7.706348	7.730504	7.753387	31
30	7.484915	7.524423	7.560635	7.594059	7.625093	7.654056	7.681208	7.706762	7.730896	7.753758	30
31	7.485603	7.525052	7.561214	7.594595	7.625592	7.654523	7.681647	7.707176	7.731287	7.754129	29
32	7.486291	7.525680	7.561792	7.595130	7.626090	7.654989	7.682085	7.707589	7.731678	7.754500	28
33	7.486978	7.526307	7.562369	7.595664	7.626588	7.655455	7.682522	7.708001	7.732068	7.754870	27
34	7.487663	7.526933	7.562945	7.596198	7.627085	7.655920	7.682960	7.708414	7.732458	7.755241	26
35	7.488348	7.527559	7.563521	7.596731	7.627582	7.656385	7.683396	7.708825	7.732848	7.755610	25
36	7.489031	7.528183	7.564096	7.597264	7.628078	7.656849	7.683832	7.709237	7.733237	7.755980	24
37	7.489714	7.528807	7.564670	7.597796	7.628573	7.657313	7.684268	7.709648	7.733626	7.756349	23
38	7.490395	7.529429	7.565243	7.598327	7.629068	7.657776	7.684704	7.710059	7.734014	7.756718	22
39	7.491075	7.530051	7.565816	7.598858	7.629562	7.658239	7.685139	7.710469	7.734403	7.757086	21
40	7.491754	7.530672	7.566387	7.599388	7.630056	7.658701	7.685573	7.710879	7.734791	7.757454	20
41	7.492432	7.531292	7.566958	7.599917	7.630549	7.659163	7.686007	7.711288	7.735178	7.757822	19
42	7.493109	7.531911	7.567529	7.600445	7.631042	7.659624	7.686441	7.711697	7.735566	7.758190	18
43	7.493781	7.532529	7.568098	7.600973	7.631534	7.660085	7.686874	7.712106	7.735952	7.758557	17
44	7.494460	7.533147	7.568667	7.601501	7.632026	7.660545	7.687307	7.712515	7.736339	7.758924	16
45	7.495134	7.533763	7.569235	7.602028	7.632517	7.661005	7.687739	7.712922	7.736725	7.759291	15
46	7.495807	7.534379	7.569803	7.602554	7.633007	7.661464	7.688171	7.713330	7.737111	7.759657	14
47	7.496478	7.534993	7.570369	7.603079	7.633497	7.661923	7.688603	7.713737	7.737497	7.760023	13
48	7.497149	7.535607	7.570935	7.603604	7.633986	7.662382	7.689034	7.714144	7.737882	7.760389	12
49	7.497819	7.536220	7.571500	7.604128	7.634475	7.662839	7.689464	7.714551	7.738267	7.760754	11
50	7.498487	7.536832	7.572065	7.604652	7.634963	7.663297	7.689894	7.714957	7.738651	7.761119	10
51	7.499155	7.537444	7.572628	7.605175	7.635451	7.663754	7.690324	7.715362	7.739035	7.761484	9
52	7.499822	7.538054	7.573191	7.605697	7.635938	7.664210	7.690754	7.715768	7.739419	7.761849	8
53	7.500487	7.538663	7.573753	7.606219	7.636425	7.664666	7.691183	7.716173	7.739803	7.762213	7
54	7.501152	7.539272	7.574315	7.606740	7.636911	7.665122	7.691611	7.716577	7.740186	7.762577	6
55	7.501815	7.539880	7.574875	7.607260	7.637396	7.665577	7.692039	7.716981	7.740568	7.762940	5
56	7.502478	7.540487	7.575436	7.607780	7.637881	7.666031	7.692467	7.717385	7.740951	7.763304	4
57	7.503139	7.541093	7.575995	7.608299	7.638366	7.666485	7.692894	7.717789	7.741333	7.763667	3
58	7.503800	7.541698	7.576553	7.608818	7.638850	7.666939	7.693321	7.718192	7.741715	7.764029	2
59	7.504459	7.542303	7.577111	7.609336	7.639333	7.667392	7.693747	7.718594	7.742096	7.764392	1
60	7.505118	7.542906	7.577668	7.609853	7.639816	7.667844	7.694173	7.718997	7.742477	7.764754	0
	89° 49'	89° 48'	89° 47'	89° 46'	89° 45'	89° 44'	89° 43'	89° 42'	89° 41'	89° 40'	*
LOG. COSINE TO SECONDS											

LOG. SINE TO SECONDS. (s.)

	0° 20'	0° 21'	0° 22'	0° 23'	0° 24'	0° 25'	0° 26'	0° 27'	0° 28'	0° 29'	
0	7.764754	7.785943	7.806146	7.825451	7.843934	7.861662	7.878695	7.895083	7.910879	7.926119	60
1	7.765115	7.786297	7.806475	7.825765	7.844235	7.861952	7.878974	7.895353	7.911138	7.926368	59
2	7.765477	7.786631	7.806803	7.826080	7.844537	7.862241	7.879252	7.895621	7.911396	7.926618	58
3	7.765838	7.786975	7.807132	7.826394	7.844838	7.862530	7.879530	7.895889	7.911654	7.926867	57
4	7.766199	7.787319	7.807460	7.826708	7.845138	7.862819	7.879807	7.896156	7.911912	7.927116	56
5	7.766559	7.787663	7.807788	7.827021	7.845439	7.863107	7.880085	7.896424	7.912170	7.927365	55
6	7.766920	7.788006	7.808115	7.827335	7.845740	7.863396	7.880362	7.896691	7.912428	7.927614	54
7	7.767289	7.788349	7.808443	7.827648	7.846040	7.863681	7.880640	7.896958	7.912685	7.927863	53
8	7.767639	7.788691	7.808770	7.827961	7.846340	7.863972	7.880917	7.897225	7.912942	7.928111	52
9	7.767999	7.789034	7.809097	7.828274	7.846640	7.864260	7.881194	7.897491	7.913200	7.928359	51
10	7.768358	7.789376	7.809423	7.828586	7.846939	7.864548	7.881470	7.897758	7.913457	7.928608	50
11	7.768716	7.789718	7.809750	7.828899	7.847239	7.864835	7.88174	7.898024	7.913714	7.928856	49
12	7.769075	7.790039	7.810076	7.829211	7.847538	7.865123	7.882023	7.898290	7.913970	7.929104	48
13	7.769433	7.790400	7.810402	7.829523	7.847837	7.865410	7.882299	7.898556	7.914227	7.929352	47
14	7.769791	7.790741	7.810728	7.829834	7.848136	7.865697	7.882575	7.898827	7.914483	7.929599	46
15	7.770149	7.791082	7.811053	7.830146	7.848431	7.865984	7.882851	7.899088	7.914740	7.929847	45
16	7.770506	7.791423	7.811378	7.830457	7.848733	7.866270	7.883127	7.899354	7.914996	7.930094	44
17	7.770863	7.791763	7.811703	7.830768	7.849031	7.866556	7.883402	7.899619	7.915252	7.930341	43
18	7.771220	7.792103	7.812028	7.831079	7.849329	7.866843	7.883678	7.899884	7.915508	7.930588	42
19	7.771576	7.792443	7.812352	7.831389	7.849626	7.867129	7.883953	7.900149	7.915763	7.930835	41
20	7.771932	7.792782	7.812677	7.831700	7.849924	7.867414	7.884228	7.900414	7.916019	7.931082	40
21	7.772288	7.793121	7.813001	7.832010	7.850221	7.867700	7.884502	7.900679	7.916274	7.931329	39
22	7.772643	7.793460	7.813324	7.832319	7.850519	7.867986	7.884777	7.900943	7.916529	7.931575	38
23	7.772999	7.793799	7.813648	7.832629	7.850816	7.868271	7.885051	7.901208	7.916785	7.931822	37
24	7.773354	7.794137	7.813971	7.832939	7.851112	7.868556	7.885326	7.901472	7.917039	7.932068	36
25	7.773708	7.794475	7.814294	7.833248	7.851409	7.868841	7.885600	7.901736	7.917294	7.932314	35
26	7.774063	7.794813	7.814617	7.833557	7.851705	7.869125	7.885874	7.902000	7.917549	7.932560	34
27	7.774417	7.795151	7.814939	7.833866	7.852001	7.869410	7.886147	7.902264	7.917803	7.932806	33
28	7.774771	7.795488	7.815262	7.834174	7.852297	7.869694	7.886421	7.902527	7.918058	7.933052	32
29	7.775124	7.795825	7.815584	7.834482	7.852593	7.869978	7.886694	7.902791	7.918312	7.933297	31
30	7.775477	7.796162	7.815905	7.834791	7.852888	7.870262	7.886968	7.903054	7.918566	7.933543	30
31	7.775830	7.796498	7.816227	7.835098	7.853184	7.870546	7.887241	7.903317	7.918820	7.933788	29
32	7.776183	7.796834	7.816548	7.835406	7.853479	7.870830	7.887514	7.903580	7.919074	7.934033	28
33	7.776535	7.797170	7.816869	7.835714	7.853774	7.871113	7.887786	7.903843	7.919327	7.934278	27
34	7.776887	7.797506	7.817190	7.836021	7.854069	7.871396	7.888059	7.904106	7.919581	7.934523	26
35	7.777239	7.797842	7.817511	7.836328	7.854363	7.871679	7.888331	7.904368	7.919834	7.934768	25
36	7.777591	7.798177	7.817831	7.836635	7.854657	7.871962	7.888603	7.904630	7.920087	7.935012	24
37	7.777942	7.798512	7.818152	7.836941	7.854952	7.872245	7.888875	7.904893	7.920340	7.935257	23
38	7.778293	7.798847	7.818471	7.837248	7.855246	7.872527	7.889147	7.905155	7.920593	7.935501	22
39	7.778644	7.799181	7.818791	7.837554	7.855539	7.872809	7.889419	7.905417	7.920846	7.935745	21
40	7.778994	7.799515	7.819111	7.837860	7.855833	7.873092	7.889690	7.905678	7.921098	7.935989	20
41	7.779344	7.799849	7.819430	7.838165	7.856126	7.873373	7.889962	7.905940	7.921351	7.936233	19
42	7.779694	7.800183	7.819749	7.838471	7.856419	7.873655	7.890233	7.906201	7.921603	7.936477	18
43	7.780043	7.800516	7.820068	7.838776	7.856712	7.873937	7.890304	7.906462	7.921855	7.936721	17
44	7.780393	7.800850	7.820386	7.839081	7.857005	7.874218	7.890775	7.906723	7.922107	7.936964	16
45	7.780742	7.801182	7.820704	7.839386	7.857298	7.874499	7.891045	7.906984	7.922359	7.937208	15
46	7.781090	7.801515	7.821022	7.839691	7.857590	7.874780	7.891316	7.907245	7.922611	7.937451	14
47	7.781439	7.801847	7.821340	7.839995	7.857882	7.875061	7.891586	7.907506	7.922862	7.937694	13
48	7.781787	7.802180	7.821658	7.840300	7.858174	7.875342	7.891856	7.907766	7.923113	7.937937	12
49	7.782135	7.802512	7.821975	7.840604	7.858466	7.875622	7.892126	7.908026	7.923366	7.938180	11
50	7.782482	7.802843	7.822292	7.840907	7.858757	7.875902	7.892396	7.908287	7.923616	7.938422	10
51	7.782829	7.803175	7.822609	7.841211	7.859049	7.876183	7.892666	7.908547	7.923867	7.938665	9
52	7.783176	7.803506	7.822926	7.841514	7.859340	7.876462	7.892935	7.908806	7.924118	7.938907	8
53	7.783523	7.803837	7.823242	7.841818	7.859631	7.876742	7.893205	7.909066	7.924368	7.939150	7
54	7.783870	7.804167	7.823558	7.842120	7.859922	7.877022	7.893474	7.909326	7.924619	7.939392	6
55	7.784216	7.804498	7.823874	7.842423	7.860212	7.877301	7.893743	7.909585	7.924869	7.939634	5
56	7.784562	7.804828	7.824190	7.842726	7.860503	7.877580	7.894012	7.909844	7.925119	7.939876	4
57	7.784907	7.805158	7.824506	7.843028	7.860793	7.877859	7.894280	7.910103	7.925370	7.940117	3
58	7.785253	7.805487	7.824821	7.843330	7.861083	7.878138	7.894549	7.910362	7.925619	7.940359	2
59	7.785598	7.805817	7.825136	7.843632	7.861373	7.878417	7.894817	7.910621	7.925869	7.940600	1
60	7.785943	7.806146	7.825451	7.843934	7.861662	7.878695	7.895085	7.910879	7.926119	7.940842	0
	89° 39'	89° 38'	89° 37'	89° 36'	89° 35'	89° 34'	89° 33'	89° 32'	89° 31'	89° 30'	

LOG. COSINE TO SECONDS.

LOG. SINE TO SECONDS. (S.)

"	0° 30'	0° 31'	0° 32'	0° 33'	0° 34'	0° 35'	0° 36'	0° 37'	0° 38'	0° 39'	"
0	7.940842	7.955082	7.968870	7.982233	7.995198	8.007787	8.020021	8.031919	8.043501	8.054781	60
1	7.941083	7.955315	7.969096	7.982453	7.995411	8.007993	8.020222	8.032115	8.043691	8.054967	59
2	7.941324	7.955549	7.969322	7.982672	7.995623	8.008200	8.020423	8.032310	8.043882	8.055152	58
3	7.941565	7.955782	7.969548	7.982891	7.995836	8.008407	8.020623	8.032506	8.044072	8.055338	57
4	7.941806	7.956015	7.969774	7.983110	7.996049	8.008613	8.020824	8.032701	8.044262	8.055523	56
5	7.942046	7.956248	7.969999	7.983329	7.996261	8.008819	8.021025	8.032896	8.044452	8.055708	55
6	7.942287	7.956481	7.970225	7.983547	7.996473	8.009026	8.021225	8.033092	8.044642	8.055893	54
7	7.942527	7.956713	7.970450	7.983766	7.996686	8.009232	8.021426	8.033287	8.044832	8.056079	53
8	7.942768	7.956946	7.970676	7.983984	7.996898	8.009438	8.021626	8.033482	8.045022	8.056264	52
9	7.943008	7.957178	7.970901	7.984203	7.997110	8.009644	8.021826	8.033676	8.045212	8.056448	51
10	7.943248	7.957410	7.971126	7.984421	7.997322	8.009850	8.022027	8.033871	8.045401	8.056633	50
11	7.943488	7.957643	7.971351	7.984639	7.997533	8.010055	8.022227	8.034066	8.045591	8.056818	49
12	7.943727	7.957875	7.971575	7.984857	7.997745	8.010261	8.022427	8.034261	8.045780	8.057003	48
13	7.943967	7.958107	7.971800	7.985075	7.997957	8.010467	8.022627	8.034455	8.045970	8.057187	47
14	7.944207	7.958338	7.972025	7.985293	7.998168	8.010672	8.022826	8.034649	8.046159	8.057372	46
15	7.944446	7.958570	7.972249	7.985511	7.998379	8.010878	8.023026	8.034844	8.046349	8.057556	45
16	7.944685	7.958802	7.972474	7.985729	7.998591	8.011083	8.023226	8.035038	8.046538	8.057741	44
17	7.944924	7.959033	7.972698	7.985946	7.998802	8.011288	8.023425	8.035232	8.046727	8.057925	43
18	7.945163	7.959264	7.972922	7.986164	7.999013	8.011493	8.023625	8.035426	8.046916	8.058109	42
19	7.945402	7.959496	7.973146	7.986381	7.999224	8.011698	8.023824	8.035620	8.047105	8.058293	41
20	7.945641	7.959727	7.973370	7.986598	7.999435	8.011903	8.024023	8.035814	8.047294	8.058477	40
21	7.945879	7.959958	7.973594	7.986815	7.999646	8.012108	8.024222	8.036008	8.047482	8.058661	39
22	7.946118	7.960188	7.973818	7.987032	7.999856	8.012313	8.024421	8.036202	8.047671	8.058845	38
23	7.946356	7.960419	7.974041	7.987249	8.000067	8.012517	8.024620	8.036396	8.047860	8.059029	37
24	7.946594	7.960650	7.974265	7.987465	8.000277	8.012722	8.024819	8.036589	8.048048	8.059213	36
25	7.946832	7.960880	7.974488	7.987682	8.000488	8.012926	8.025018	8.036783	8.048237	8.059396	35
26	7.947070	7.961110	7.974711	7.987899	8.000698	8.013130	8.025217	8.036976	8.048425	8.059580	34
27	7.947308	7.961341	7.974934	7.988115	8.000908	8.013335	8.025415	8.037169	8.048613	8.059764	33
28	7.947545	7.961571	7.975157	7.988332	8.001118	8.013539	8.025614	8.037363	8.048802	8.059947	32
29	7.947783	7.961801	7.975380	7.988548	8.001328	8.013743	8.025812	8.037556	8.048990	8.060130	31
30	7.948020	7.962031	7.975603	7.988764	8.001538	8.013947	8.026011	8.037749	8.049178	8.060314	30
31	7.948257	7.962260	7.975826	7.988980	8.001748	8.014151	8.026209	8.037942	8.049366	8.060497	29
32	7.948495	7.962490	7.976048	7.989196	8.001957	8.014354	8.026407	8.038135	8.049554	8.060680	28
33	7.948732	7.962719	7.976271	7.989412	8.002167	8.014558	8.026605	8.038327	8.049741	8.060863	27
34	7.948968	7.962949	7.976493	7.989627	8.002376	8.014761	8.026803	8.038520	8.049929	8.061046	26
35	7.949205	7.963178	7.976715	7.989843	8.002586	8.014965	8.027001	8.038713	8.050117	8.061229	25
36	7.949442	7.963407	7.976937	7.990058	8.002795	8.015168	8.027199	8.038905	8.050304	8.061412	24
37	7.949678	7.963636	7.977159	7.990274	8.003004	8.015372	8.027397	8.039098	8.050492	8.061594	23
38	7.949915	7.963865	7.977381	7.990489	8.003213	8.015575	8.027594	8.039290	8.050679	8.061777	22
39	7.950151	7.964094	7.977603	7.990704	8.003422	8.015778	8.027792	8.039482	8.050866	8.061960	21
40	7.950387	7.964322	7.977824	7.990919	8.003631	8.015981	8.027989	8.039675	8.051054	8.062142	20
41	7.950623	7.964551	7.978046	7.991134	8.003840	8.016184	8.028187	8.039867	8.051241	8.062325	19
42	7.950859	7.964779	7.978267	7.991349	8.004048	8.016386	8.028384	8.040059	8.051428	8.062507	18
43	7.951094	7.965007	7.978489	7.991564	8.004257	8.016589	8.028581	8.040251	8.051615	8.062689	17
44	7.951330	7.965236	7.978710	7.991778	8.004465	8.016792	8.028778	8.040443	8.051802	8.062871	16
45	7.951565	7.965464	7.978931	7.991993	8.004673	8.016994	8.028975	8.040634	8.051989	8.063054	15
46	7.951801	7.965692	7.979152	7.992207	8.004882	8.017197	8.029172	8.040826	8.052175	8.063236	14
47	7.952036	7.965919	7.979373	7.992422	8.005090	8.017399	8.029369	8.041018	8.052362	8.063418	13
48	7.952271	7.966147	7.979593	7.992636	8.005298	8.017601	8.029566	8.041209	8.052549	8.063599	12
49	7.952506	7.966375	7.979814	7.992850	8.005506	8.017803	8.029762	8.041401	8.052735	8.063781	11
50	7.952741	7.966602	7.980034	7.993064	8.005714	8.018005	8.029959	8.041592	8.052922	8.063963	10
51	7.952975	7.966829	7.980255	7.993278	8.005921	8.018207	8.030155	8.041783	8.053108	8.064145	9
52	7.953210	7.967056	7.980475	7.993491	8.006129	8.018409	8.030352	8.041974	8.053294	8.064326	8
53	7.953444	7.967284	7.980695	7.993705	8.006337	8.018611	8.030548	8.042165	8.053480	8.064508	7
54	7.953679	7.967511	7.980915	7.993919	8.006544	8.018813	8.030744	8.042356	8.053666	8.064689	6
55	7.953913	7.967737	7.981135	7.994132	8.006751	8.019014	8.030940	8.042543	8.053852	8.064871	5
56	7.954147	7.967964	7.981355	7.994346	8.006959	8.019216	8.031136	8.042738	8.054038	8.065052	4
57	7.954381	7.968191	7.981575	7.994559	8.007166	8.019417	8.031332	8.042929	8.054224	8.065233	3
58	7.954615	7.968417	7.981794	7.994772	8.007373	8.019618	8.031528	8.043120	8.054410	8.065414	2
59	7.954848	7.968644	7.982014	7.994985	8.007580	8.019820	8.031724	8.043316	8.054596	8.065593	1
60	7.955082	7.968870	7.982233	7.995198	8.007787	8.020021	8.031919	8.043501	8.054781	8.065776	0
"	89° 29'	89° 28'	89° 27'	89° 26'	89° 25'	89° 24'	89° 23'	89° 22'	89° 21'	89° 20'	"

LOG. COSINE TO SECONDS.

LOG. SINE TO SECONDS. (s.)

"	0° 40'	0° 41'	0° 42'	0° 43'	0° 44'	0° 45'	0° 46'	0° 47'	0° 48'	0° 49'	"
0	8.065776	8.076500	8.086965	8.097183	8.107167	8.116926	8.126471	8.135810	8.144953	8.153907	50
1	8.065957	8.076676	8.087137	8.097351	8.107331	8.117987	8.126628	8.135964	8.145104	8.154055	59
2	8.066138	8.076853	8.087309	8.097520	8.107496	8.117248	8.126786	8.136118	8.145255	8.154203	58
3	8.066319	8.077029	8.087481	8.097688	8.107660	8.117408	8.126943	8.136272	8.145405	8.154350	57
4	8.066499	8.077205	8.087653	8.097856	8.107824	8.117569	8.127100	8.136426	8.145556	8.154498	56
5	8.066680	8.077381	8.087825	8.098024	8.107989	8.117730	8.127257	8.136580	8.145706	8.154645	55
6	8.066861	8.077558	8.087997	8.098192	8.108153	8.117890	8.127414	8.136733	8.145857	8.154793	54
7	8.067041	8.077734	8.088169	8.098360	8.108317	8.118051	8.127571	8.136887	8.146007	8.154940	53
8	8.067221	8.077910	8.088341	8.098528	8.108481	8.118211	8.127728	8.137041	8.146158	8.155088	52
9	8.067402	8.078086	8.088513	8.098695	8.108645	8.118371	8.127885	8.137194	8.146308	8.155235	51
10	8.067582	8.078261	8.088684	8.098863	8.108809	8.118532	8.128042	8.137348	8.146458	8.155382	50
11	8.067762	8.078437	8.088856	8.099031	8.108973	8.118692	8.128198	8.137501	8.146609	8.155529	49
12	8.067942	8.078613	8.089028	8.099198	8.109136	8.118852	8.128355	8.137654	8.146759	8.155676	48
13	8.068122	8.078789	8.089199	8.099366	8.109300	8.119012	8.128512	8.137808	8.146909	8.155823	47
14	8.068302	8.078964	8.089371	8.099533	8.109464	8.119172	8.128668	8.137961	8.147059	8.155970	46
15	8.068482	8.079140	8.089542	8.099701	8.109627	8.119332	8.128825	8.138114	8.147209	8.156117	45
16	8.068662	8.079315	8.089713	8.099868	8.109791	8.119492	8.128981	8.138267	8.147359	8.156264	44
17	8.068842	8.079490	8.089884	8.100035	8.109954	8.119652	8.129138	8.138420	8.147509	8.156411	43
18	8.069021	8.079666	8.090055	8.100202	8.110118	8.119812	8.129294	8.138574	8.147659	8.156558	42
19	8.069201	8.079841	8.090227	8.100370	8.110281	8.119971	8.129450	8.138726	8.147809	8.156705	41
20	8.069380	8.080016	8.090398	8.100537	8.110444	8.120131	8.129606	8.138879	8.147959	8.156852	40
21	8.069560	8.080191	8.090568	8.100704	8.110608	8.120291	8.129763	8.139032	8.148108	8.156998	39
22	8.069739	8.080366	8.090739	8.100871	8.110771	8.120450	8.129919	8.139185	8.148258	8.157145	38
23	8.069918	8.080541	8.090910	8.101037	8.110934	8.120610	8.130075	8.139338	8.148408	8.157292	37
24	8.070097	8.080716	8.091081	8.101204	8.111097	8.120769	8.130231	8.139491	8.148557	8.157438	36
25	8.070277	8.080891	8.091252	8.101371	8.111260	8.120929	8.130387	8.139643	8.148707	8.157585	35
26	8.070456	8.081065	8.091422	8.101538	8.111423	8.121088	8.130543	8.139796	8.148856	8.157731	34
27	8.070635	8.081240	8.091593	8.101704	8.111586	8.121247	8.130699	8.139948	8.149005	8.157877	33
28	8.070813	8.081415	8.091763	8.101871	8.111749	8.121407	8.130854	8.140101	8.149155	8.158024	32
29	8.070992	8.081589	8.091934	8.102037	8.111911	8.121566	8.131010	8.140253	8.149304	8.158170	31
30	8.071171	8.081764	8.092104	8.102204	8.112074	8.121725	8.131166	8.140406	8.149453	8.158316	30
31	8.071350	8.081938	8.092274	8.102370	8.112237	8.121884	8.131321	8.140558	8.149603	8.158462	29
32	8.071528	8.082112	8.092444	8.102536	8.112399	8.122043	8.131477	8.140710	8.149752	8.158609	28
33	8.071707	8.082287	8.092615	8.102703	8.112562	8.122202	8.131632	8.140863	8.149901	8.158755	27
34	8.071885	8.082461	8.092785	8.102869	8.112724	8.122361	8.131788	8.141015	8.150050	8.158901	26
35	8.072064	8.082635	8.092955	8.103035	8.112886	8.122519	8.131943	8.141167	8.150199	8.159047	25
36	8.072242	8.082809	8.093125	8.103201	8.113049	8.122678	8.132099	8.141319	8.150348	8.159193	24
37	8.072420	8.082983	8.093294	8.103367	8.113211	8.122837	8.132254	8.141471	8.150497	8.159339	23
38	8.072598	8.083157	8.093464	8.103533	8.113373	8.122996	8.132409	8.141623	8.150646	8.159484	22
39	8.072776	8.083330	8.093634	8.103699	8.113535	8.123154	8.132564	8.141775	8.150794	8.159630	21
40	8.072955	8.083504	8.093804	8.103864	8.113697	8.123313	8.132720	8.141927	8.150943	8.159776	20
41	8.073132	8.083678	8.093973	8.104030	8.113859	8.123471	8.132875	8.142079	8.151092	8.159922	19
42	8.073310	8.083851	8.094143	8.104196	8.114021	8.123629	8.133030	8.142231	8.151241	8.160067	18
43	8.073488	8.084025	8.094312	8.104361	8.114183	8.123788	8.133185	8.142382	8.151389	8.160213	17
44	8.073666	8.084198	8.094482	8.104527	8.114345	8.123946	8.133339	8.142534	8.151538	8.160358	16
45	8.073844	8.084372	8.094651	8.104692	8.114507	8.124104	8.133494	8.142685	8.151686	8.160504	15
46	8.074021	8.084545	8.094820	8.104858	8.114669	8.124263	8.133649	8.142837	8.151835	8.160649	14
47	8.074199	8.084718	8.094989	8.105023	8.114830	8.124421	8.133804	8.142989	8.151983	8.160795	13
48	8.074376	8.084892	8.095159	8.105188	8.114992	8.124579	8.133959	8.143140	8.152131	8.160940	12
49	8.074553	8.085065	8.095328	8.105354	8.115153	8.124737	8.134113	8.143291	8.152280	8.161086	11
50	8.074731	8.085238	8.095497	8.105519	8.115315	8.124895	8.134268	8.143443	8.152428	8.161231	10
51	8.074908	8.085411	8.095666	8.105684	8.115476	8.125053	8.134422	8.143594	8.152576	8.161376	9
52	8.075085	8.085584	8.095835	8.105849	8.115638	8.125210	8.134577	8.143745	8.152724	8.161521	8
53	8.075262	8.085757	8.096003	8.106014	8.115799	8.125368	8.134731	8.143896	8.152872	8.161666	7
54	8.075439	8.085929	8.096172	8.106179	8.115960	8.125520	8.134885	8.144045	8.153020	8.161811	6
55	8.075616	8.086102	8.096341	8.106344	8.116121	8.125684	8.135040	8.144199	8.153168	8.161956	5
56	8.075793	8.086275	8.096509	8.106508	8.116282	8.125841	8.135194	8.144350	8.153316	8.162101	4
57	8.075970	8.086447	8.096678	8.106673	8.116443	8.125999	8.135348	8.144501	8.153464	8.162246	3
58	8.076146	8.086620	8.096846	8.106838	8.116604	8.126156	8.135502	8.144652	8.153612	8.162391	2
59	8.076323	8.086792	8.097015	8.107002	8.116765	8.126314	8.135656	8.144802	8.153760	8.162536	1
60	8.076500	8.086965	8.097183	8.107167	8.116926	8.126471	8.135810	8.144953	8.153907	8.162681	0
"	89° 19'	89° 18'	89° 17'	89° 16'	89° 15'	89° 14'	89° 13'	89° 12'	89° 11'	89° 10'	"

LOG. COSINE TO SECONDS.

0° or 0 ^m .			LOG. SINES, &c. (t.)				0 deg.		
sec.	"	'	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	sec.
0	0		0.000000	Infinite.	0.000000	Infinite.	10.000000	10.000000	60
1	15		5.861666	14.138334	5.861666	14.138334	10.000000	10.000000	45
2	30		6.162696	13.837304	6.162696	13.837304	10.000000	10.000000	30
3	45		6.338787	13.661213	6.338787	13.661213	10.000000	10.000000	15
4	1		6.463726	13.536274	6.463726	13.536274	10.000000	10.000000	59
5	15		6.560636	13.439364	6.560636	13.439364	10.000000	10.000000	45
6	30		6.639817	13.360183	6.639817	13.360183	10.000000	10.000000	30
7	45		6.706764	13.293236	6.706764	13.293236	10.000000	10.000000	15
8	2		6.764756	13.235244	6.764756	13.235244	10.000000	10.000000	58
9	15		6.815909	13.184091	6.815909	13.184091	10.000000	10.000000	45
10	30		6.861666	13.138334	6.861666	13.138334	10.000000	10.000000	30
11	45		6.903059	13.096941	6.903059	13.096941	10.000000	10.000000	15
12	3		6.940847	13.059153	6.940847	13.059153	10.000000	10.000000	57
13	15		6.975609	13.024391	6.975610	13.024390	10.000000	10.000000	45
14	30		7.007794	12.992206	7.007794	12.992206	10.000000	10.000000	30
15	45		7.037757	12.962243	7.037758	12.962242	10.000000	10.000000	15
16	4		7.065786	12.934214	7.065786	12.934214	10.000000	10.000000	56
17	15		7.092115	12.907885	7.092115	12.907885	10.000000	10.000000	45
18	30		7.116938	12.883062	7.116939	12.883061	10.000000	10.000000	30
19	45		7.140420	12.859580	7.140420	12.859580	10.000000	10.000000	15
20	5		7.162696	12.837304	7.162696	12.837304	10.000000	10.000000	55
21	15		7.183885	12.816115	7.183886	12.816114	10.000000	10.000000	45
22	30		7.204089	12.795911	7.204089	12.795911	10.000000	10.000000	30
23	45		7.223394	12.776606	7.223394	12.776606	10.000001	9.999999	15
24	6		7.241877	12.758123	7.241878	12.758122	10.000001	9.999999	54
25	15		7.259606	12.740394	7.259607	12.740393	10.000001	9.999999	45
26	30		7.276639	12.723361	7.276640	12.723360	10.000001	9.999999	30
27	45		7.293030	12.706970	7.293030	12.706970	10.000001	9.999999	15
28	7		7.308824	12.691176	7.308825	12.691175	10.000001	9.999999	53
29	15		7.324064	12.675936	7.324065	12.675935	10.000001	9.999999	45
30	30		7.338787	12.661213	7.338788	12.661212	10.000001	9.999999	30
31	45		7.353027	12.646973	7.353029	12.646971	10.000001	9.999999	15
32	8		7.366816	12.633184	7.366817	12.633183	10.000001	9.999999	52
33	15		7.380180	12.619820	7.380181	12.619819	10.000001	9.999999	45
34	30		7.393145	12.606855	7.393146	12.606854	10.000001	9.999999	30
35	45		7.405734	12.594266	7.405735	12.594265	10.000002	9.999999	15
36	9		7.417968	12.582032	7.417970	12.582030	10.000002	9.999998	51
37	15		7.429867	12.570133	7.429869	12.570131	10.000002	9.999998	45
38	30		7.441449	12.558551	7.441451	12.558549	10.000002	9.999998	30
39	45		7.452730	12.547270	7.452732	12.547268	10.000002	9.999998	15
40	10		7.463725	12.536275	7.463727	12.536273	10.000002	9.999998	50
41	15		7.474449	12.525551	7.474451	12.525549	10.000002	9.999998	45
42	30		7.484915	12.515085	7.484917	12.515083	10.000002	9.999998	30
43	45		7.495134	12.504866	7.495136	12.504864	10.000002	9.999998	15
44	11		7.505118	12.494882	7.505120	12.494880	10.000002	9.999998	49
45	15		7.514878	12.485122	7.514880	12.485120	10.000002	9.999998	45
46	30		7.524423	12.475577	7.524426	12.475574	10.000002	9.999998	30
47	45		7.533763	12.466237	7.533766	12.466234	10.000003	9.999997	15
48	12		7.542906	12.457094	7.542909	12.457091	10.000003	9.999997	48
49	15		7.551861	12.448139	7.551864	12.448136	10.000003	9.999997	45
50	30		7.560635	12.439365	7.560638	12.439362	10.000003	9.999997	30
51	45		7.569235	12.430765	7.569238	12.430762	10.000003	9.999997	15
52	13		7.577668	12.422332	7.577671	12.422329	10.000003	9.999997	47
53	15		7.585941	12.414059	7.585944	12.414056	10.000003	9.999997	45
54	30		7.594059	12.405941	7.594062	12.405938	10.000004	9.999996	30
55	45		7.602028	12.397972	7.602031	12.397969	10.000004	9.999996	15
56	14		7.609853	12.390147	7.609857	12.390143	10.000004	9.999996	46
57	15		7.617540	12.382460	7.617543	12.382457	10.000004	9.999996	45
58	30		7.625093	12.374907	7.625097	12.374903	10.000004	9.999996	30
59	45		7.632517	12.367483	7.632521	12.367479	10.000004	9.999996	15
60	15		7.639816	12.360184	7.639820	12.360189	10.000004	9.999996	45
sec.	"	'	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	sec.
5° 59 ^m .			LOG. SINES, &c.				89 deg.		

0 ^h 1 ^m .		LOG. SINES, &c. (t.)						0 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	7.639816	12.360184	7.639820	12.360180	10.000004	9.999996	45	60
1	15	7.646994	12.353006	7.646999	12.353001	10.000004	9.999996	45	59
2	30	7.654056	12.345944	7.654061	12.345939	10.000004	9.999996	30	58
3	45	7.661005	12.338995	7.661010	12.338990	10.000005	9.999995	15	57
4	16	7.667844	12.332156	7.667849	12.332151	10.000005	9.999995	44	56
5	15	7.674578	12.325422	7.674583	12.325417	10.000005	9.999995	45	55
6	30	7.681208	12.318792	7.681213	12.318787	10.000005	9.999995	30	54
7	45	7.687739	12.312261	7.687744	12.312256	10.000005	9.999995	15	53
8	17	7.694173	12.305827	7.694179	12.305821	10.000005	9.999995	43	52
9	15	7.700513	12.299487	7.700519	12.299481	10.000006	9.999994	45	51
10	30	7.706762	12.293238	7.706768	12.293232	10.000006	9.999994	30	50
11	45	7.712922	12.287078	7.712928	12.287072	10.000006	9.999994	15	49
12	18	7.718997	12.281003	7.719003	12.280997	10.000006	9.999994	42	48
13	15	7.724987	12.275013	7.724993	12.275007	10.000006	9.999994	45	47
14	30	7.730896	12.269104	7.730902	12.269098	10.000006	9.999994	30	46
15	45	7.736725	12.263275	7.736732	12.263268	10.000007	9.999993	15	45
16	19	7.742477	12.257523	7.742484	12.257516	10.000007	9.999993	41	44
17	15	7.748155	12.251845	7.748161	12.251839	10.000007	9.999993	45	43
18	30	7.753758	12.246242	7.753765	12.246235	10.000007	9.999993	30	42
19	45	7.759291	12.240709	7.759298	12.240702	10.000007	9.999993	15	41
20	20	7.764754	12.235246	7.764761	12.235239	10.000007	9.999993	40	40
21	15	7.770149	12.229851	7.770156	12.229844	10.000008	9.999992	45	39
22	30	7.775477	12.224523	7.775485	12.224515	10.000008	9.999992	30	38
23	45	7.780742	12.219258	7.780749	12.219251	10.000008	9.999992	15	37
24	21	7.785943	12.214057	7.785951	12.214049	10.000008	9.999992	39	36
25	15	7.791082	12.208918	7.791091	12.208909	10.000008	9.999992	45	35
26	30	7.796162	12.203838	7.796170	12.203830	10.000009	9.999991	30	34
27	45	7.801182	12.198818	7.801191	12.198809	10.000009	9.999991	15	33
28	22	7.806146	12.193854	7.806155	12.193845	10.000009	9.999991	38	32
29	15	7.811053	12.188947	7.811062	12.188938	10.000009	9.999991	45	31
30	30	7.815905	12.184095	7.815915	12.184085	10.000009	9.999991	30	30
31	45	7.820704	12.179296	7.820714	12.179286	10.000010	9.999990	15	29
32	23	7.825451	12.174549	7.825460	12.174540	10.000010	9.999990	37	28
33	15	7.830146	12.169854	7.830156	12.169844	10.000010	9.999990	45	27
34	30	7.834791	12.165209	7.834801	12.165199	10.000010	9.999990	30	26
35	45	7.839386	12.160614	7.839397	12.160603	10.000010	9.999990	15	25
36	24	7.843934	12.156066	7.843944	12.156056	10.000011	9.999989	36	24
37	15	7.848434	12.151566	7.848445	12.151555	10.000011	9.999989	45	23
38	30	7.852888	12.147112	7.852900	12.147100	10.000011	9.999989	30	22
39	45	7.857298	12.142702	7.857309	12.142691	10.000011	9.999989	15	21
40	25	7.861662	12.138338	7.861674	12.138326	10.000012	9.999988	35	20
41	15	7.865984	12.134016	7.865995	12.134005	10.000012	9.999988	45	19
42	30	7.870262	12.129738	7.870274	12.129726	10.000012	9.999988	30	18
43	45	7.874499	12.125501	7.874511	12.125489	10.000012	9.999988	15	17
44	26	7.878695	12.121305	7.878708	12.121292	10.000012	9.999988	34	16
45	15	7.882851	12.117149	7.882864	12.117136	10.000013	9.999987	45	15
46	30	7.886968	12.113032	7.886981	12.113019	10.000013	9.999987	30	14
47	45	7.891045	12.108955	7.891059	12.108941	10.000013	9.999987	15	13
48	27	7.895085	12.104915	7.895099	12.104901	10.000013	9.999987	33	12
49	15	7.899088	12.100912	7.899102	12.100898	10.000014	9.999986	45	11
50	30	7.903054	12.096946	7.903068	12.096932	10.000014	9.999986	30	10
51	45	7.906984	12.093016	7.906998	12.093002	10.000014	9.999986	15	9
52	28	7.910879	12.089121	7.910895	12.089106	10.000014	9.999986	32	8
53	15	7.914740	12.085260	7.914754	12.085246	10.000015	9.999985	45	7
54	30	7.918566	12.081434	7.918581	12.081419	10.000015	9.999985	30	6
55	45	7.922359	12.077641	7.922374	12.077626	10.000015	9.999985	15	5
56	29	7.926119	12.073881	7.926134	12.073866	10.000016	9.999984	31	4
57	15	7.929847	12.070153	7.929862	12.070138	10.000016	9.999984	45	3
58	30	7.933543	12.066457	7.933559	12.066441	10.000016	9.999984	30	2
59	45	7.937208	12.062792	7.937224	12.062776	10.000016	9.999984	15	1
60	30	7.940842	12.059158	7.940858	12.059142	10.000017	9.999983	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5 ^h 58 ^m .		LOG. SINES, &c.						89 deg.	

0° 2'		LOG. SINES, &c. (L.)						0 deg.	
sec.	'	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	'	sec.
0	30	7.940842	12.059158	7.940858	12.059142	10.000017	9.999983	30	60
1	15	7.944446	12.055554	7.944463	12.055537	10.000017	9.999983	45	59
2	30	7.948020	12.051980	7.948037	12.051963	10.000017	9.999983	30	58
3	45	7.951563	12.048435	7.951583	12.048417	10.000017	9.999983	15	57
4	31	7.955082	12.044918	7.955100	12.044900	10.000018	9.999982	29	56
5	15	7.958570	12.041430	7.958588	12.041412	10.000018	9.999982	45	55
6	30	7.962031	12.037969	7.962049	12.037951	10.000018	9.999982	30	54
7	45	7.965464	12.034536	7.965482	12.034518	10.000019	9.999981	15	53
8	32	7.968870	12.031130	7.968889	12.031111	10.000019	9.999981	28	52
9	15	7.972249	12.027751	7.972269	12.027731	10.000019	9.999981	45	51
10	30	7.975603	12.024397	7.975622	12.024378	10.000019	9.999981	30	50
11	45	7.978931	12.021069	7.978951	12.021049	10.000020	9.999980	15	49
12	33	7.982233	12.017767	7.982253	12.017747	10.000020	9.999980	27	48
13	15	7.985511	12.014489	7.985531	12.014469	10.000020	9.999980	45	47
14	30	7.988785	12.011236	7.988805	12.011215	10.000021	9.999979	30	46
15	45	7.991993	12.008007	7.992014	12.007986	10.000021	9.999979	15	45
16	34	7.995198	12.004802	7.995219	12.004781	10.000021	9.999979	26	44
17	15	7.998379	12.001621	7.998401	12.001599	10.000022	9.999978	45	43
18	30	8.001538	11.998462	8.001560	11.998440	10.000022	9.999978	30	42
19	45	8.004673	11.995327	8.004696	11.995304	10.000022	9.999978	15	41
20	35	8.007787	11.992213	8.007809	11.992191	10.000023	9.999977	25	40
21	15	8.010878	11.989122	8.010900	11.989099	10.000023	9.999977	45	39
22	30	8.013947	11.986053	8.013970	11.986030	10.000023	9.999977	30	38
23	45	8.016994	11.983006	8.017018	11.982982	10.000024	9.999976	15	37
24	36	8.020021	11.979979	8.020044	11.979955	10.000024	9.999976	24	36
25	15	8.023026	11.976974	8.023050	11.976950	10.000024	9.999976	45	35
26	30	8.026011	11.973989	8.026035	11.973965	10.000025	9.999975	30	34
27	45	8.028975	11.971025	8.029000	11.971000	10.000025	9.999975	15	33
28	37	8.031919	11.968081	8.031945	11.968055	10.000025	9.999975	23	32
29	15	8.034844	11.965156	8.034869	11.965131	10.000026	9.999974	45	31
30	30	8.037749	11.962251	8.037775	11.962225	10.000026	9.999974	30	30
31	45	8.040634	11.959366	8.040660	11.959339	10.000026	9.999974	15	29
32	38	8.043501	11.956499	8.043527	11.956473	10.000027	9.999973	22	28
33	15	8.046349	11.953651	8.046375	11.953624	10.000027	9.999973	45	27
34	30	8.049178	11.950822	8.049205	11.950795	10.000027	9.999973	30	26
35	45	8.051989	11.948011	8.052016	11.947984	10.000028	9.999972	15	25
36	39	8.054781	11.945219	8.054809	11.945191	10.000028	9.999972	21	24
37	15	8.057556	11.942444	8.057585	11.942415	10.000028	9.999972	45	23
38	30	8.060314	11.939686	8.060342	11.939658	10.000029	9.999971	30	22
39	45	8.063054	11.936946	8.063083	11.936917	10.000029	9.999971	15	21
40	40	8.065776	11.934224	8.065806	11.934194	10.000029	9.999971	20	20
41	15	8.068482	11.931518	8.068512	11.931488	10.000030	9.999970	45	19
42	30	8.071171	11.928829	8.071201	11.928799	10.000030	9.999970	30	18
43	45	8.073844	11.926156	8.073874	11.926126	10.000031	9.999969	15	17
44	41	8.076500	11.923500	8.076531	11.923469	10.000031	9.999969	19	16
45	15	8.079140	11.920860	8.079171	11.920829	10.000031	9.999969	45	15
46	30	8.081764	11.918236	8.081795	11.918205	10.000032	9.999968	30	14
47	45	8.084372	11.915628	8.084404	11.915596	10.000032	9.999968	15	13
48	42	8.086965	11.913035	8.086997	11.913003	10.000032	9.999968	18	12
49	15	8.089542	11.910458	8.089575	11.910425	10.000033	9.999967	45	11
50	30	8.092104	11.907896	8.092137	11.907863	10.000033	9.999967	30	10
51	45	8.094651	11.905349	8.094685	11.905315	10.000034	9.999966	15	9
52	43	8.097183	11.902817	8.097217	11.902783	10.000034	9.999966	17	8
53	15	8.099701	11.900299	8.099735	11.900265	10.000034	9.999966	45	7
54	30	8.102204	11.897796	8.102239	11.897761	10.000035	9.999965	30	6
55	45	8.104692	11.895308	8.104728	11.895272	10.000035	9.999965	15	5
56	44	8.107167	11.892833	8.107202	11.892797	10.000036	9.999964	16	4
57	15	8.109627	11.890373	8.109663	11.890337	10.000036	9.999964	45	3
58	30	8.112074	11.887926	8.112110	11.887890	10.000036	9.999964	30	2
59	45	8.114507	11.885493	8.114544	11.885456	10.000037	9.999963	15	1
60	45	8.116926	11.883074	8.116963	11.883037	10.000037	9.999963	15	0
sec.	'	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	'	sec.
5° 57'		LOG. SINES, &c.						59 deg.	

0h 3m		LOG. SINES, &c. (t)						0 deg.	
sec.	°	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	°	sec.
0	45	8.116926	11.883074	8.116963	11.883037	10.000037	9.999963	15	60
1	15	8.119332	11.880668	8.119370	11.880630	10.000038	9.999962	45	59
2	30	8.121725	11.878275	8.121763	11.878237	10.000038	9.999962	30	58
3	45	8.124104	11.875896	8.124143	11.875857	10.000039	9.999961	15	57
4	46	8.126471	11.873529	8.126510	11.873490	10.000039	9.999961	14	56
5	15	8.128825	11.871175	8.128864	11.871136	10.000039	9.999961	45	55
6	30	8.131166	11.868834	8.131206	11.868794	10.000040	9.999960	30	54
7	45	8.133494	11.866506	8.133534	11.866465	10.000040	9.999960	15	53
8	47	8.135810	11.864190	8.135851	11.864149	10.000041	9.999959	13	52
9	15	8.138114	11.861886	8.138155	11.861845	10.000041	9.999959	45	51
10	30	8.140406	11.859594	8.140447	11.859553	10.000042	9.999958	30	50
11	45	8.142685	11.857315	8.142727	11.857273	10.000042	9.999958	15	49
12	48	8.144953	11.855047	8.144996	11.855004	10.000042	9.999958	12	48
13	15	8.147209	11.852791	8.147252	11.852748	10.000043	9.999957	45	47
14	30	8.149453	11.850547	8.149497	11.850503	10.000043	9.999957	30	46
15	45	8.151686	11.848314	8.151730	11.848270	10.000044	9.999956	15	45
16	49	8.153907	11.846093	8.153952	11.846048	10.000044	9.999956	11	44
17	15	8.156117	11.843883	8.156162	11.843838	10.000045	9.999955	45	43
18	30	8.158316	11.841684	8.158361	11.841639	10.000045	9.999955	30	42
19	45	8.160504	11.839496	8.160549	11.839450	10.000046	9.999954	15	41
20	50	8.162681	11.837319	8.162727	11.837273	10.000046	9.999954	10	40
21	15	8.164893	11.835153	8.164893	11.835107	10.000046	9.999954	45	39
22	30	8.167002	11.832998	8.167049	11.832951	10.000047	9.999953	30	38
23	45	8.169146	11.830854	8.169194	11.830806	10.000047	9.999953	15	37
24	51	8.171280	11.828720	8.171328	11.828672	10.000048	9.999952	9	36
25	15	8.173404	11.826596	8.173452	11.826548	10.000048	9.999952	45	35
26	30	8.175517	11.824483	8.175566	11.824434	10.000049	9.999951	30	34
27	45	8.177620	11.822380	8.177669	11.822331	10.000049	9.999951	15	33
28	52	8.179713	11.820287	8.179763	11.820237	10.000050	9.999950	8	32
29	15	8.181796	11.818204	8.181846	11.818154	10.000050	9.999950	45	31
30	30	8.183868	11.816132	8.183919	11.816081	10.000051	9.999949	30	30
31	45	8.185931	11.814069	8.185983	11.814017	10.000051	9.999949	15	29
32	53	8.187985	11.812015	8.188036	11.811964	10.000052	9.999948	7	28
33	15	8.190028	11.809972	8.190080	11.809919	10.000052	9.999948	45	27
34	30	8.192062	11.807938	8.192115	11.807885	10.000053	9.999947	30	26
35	45	8.194087	11.805913	8.194140	11.805860	10.000053	9.999947	15	25
36	54	8.196102	11.803898	8.196156	11.803844	10.000054	9.999946	6	24
37	15	8.198108	11.801892	8.198162	11.801838	10.000054	9.999946	45	23
38	30	8.200104	11.799896	8.200159	11.799841	10.000055	9.999945	30	22
39	45	8.202092	11.797908	8.202147	11.797853	10.000055	9.999945	15	21
40	55	8.204070	11.795930	8.204126	11.795874	10.000056	9.999944	5	20
41	15	8.206040	11.793960	8.206096	11.793904	10.000056	9.999944	45	19
42	30	8.208000	11.792000	8.208057	11.791943	10.000057	9.999943	30	18
43	45	8.209952	11.790048	8.210009	11.789991	10.000057	9.999943	15	17
44	56	8.211895	11.788105	8.211953	11.788047	10.000058	9.999942	4	16
45	15	8.213829	11.786171	8.213887	11.786113	10.000058	9.999942	45	15
46	30	8.215755	11.784245	8.215814	11.784186	10.000059	9.999941	30	14
47	45	8.217672	11.782328	8.217731	11.782269	10.000059	9.999941	15	13
48	57	8.219581	11.780419	8.219641	11.780359	10.000060	9.999940	3	12
49	15	8.221481	11.778519	8.221542	11.778458	10.000060	9.999940	45	11
50	30	8.223374	11.776626	8.223434	11.776565	10.000061	9.999939	30	10
51	45	8.225258	11.774742	8.225319	11.774681	10.000061	9.999939	15	9
52	58	8.227133	11.772867	8.227195	11.772805	10.000062	9.999938	2	8
53	15	8.229001	11.770999	8.229064	11.770936	10.000062	9.999938	45	7
54	30	8.230861	11.769139	8.230924	11.769076	10.000063	9.999937	30	6
55	45	8.232713	11.767287	8.232776	11.767224	10.000063	9.999937	15	5
56	59	8.234557	11.765443	8.234621	11.765379	10.000064	9.999936	1	4
57	15	8.236393	11.763607	8.236457	11.763542	10.000065	9.999935	45	3
58	30	8.238221	11.761779	8.238286	11.761713	10.000065	9.999935	30	2
59	45	8.240042	11.759958	8.240108	11.759892	10.000066	9.999934	15	1
60	60	8.241855	11.758145	8.241921	11.758078	10.000066	9.999934	0	0
sec.	°	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	°	sec.
5h 56m		LOG SINES, &c.						89 deg.	

0° 4'		LOG. SINES, &c. (t)						1 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	8.241855	11.758145	8.241921	11.758079	10.000066	9.999934	60	60
1	15	8.243661	11.756339	8.243728	11.756272	10.000067	9.999933	45	59
2	30	8.245459	11.754541	8.245526	11.754474	10.000067	9.999933	30	58
3	45	8.247250	11.752750	8.247318	11.752682	10.000068	9.999932	15	57
4	1	8.249033	11.750967	8.249101	11.750899	10.000068	9.999932	59	56
5	15	8.250809	11.749191	8.250878	11.749122	10.000069	9.999931	45	55
6	30	8.252578	11.747422	8.252648	11.747352	10.000070	9.999930	30	54
7	45	8.254340	11.745660	8.254410	11.745590	10.000070	9.999930	15	53
8	2	8.256094	11.743906	8.256165	11.743835	10.000071	9.999929	58	52
9	15	8.257842	11.742158	8.257913	11.742087	10.000071	9.999929	45	51
10	30	8.259582	11.740418	8.259654	11.740346	10.000072	9.999928	30	50
11	45	8.261316	11.738684	8.261388	11.738612	10.000072	9.999928	15	49
12	3	8.263042	11.736958	8.263115	11.736885	10.000073	9.999927	57	48
13	15	8.264762	11.735238	8.264836	11.735164	10.000074	9.999926	45	47
14	30	8.266475	11.733525	8.266549	11.733451	10.000074	9.999926	30	46
15	45	8.268181	11.731819	8.268256	11.731744	10.000075	9.999925	15	45
16	4	8.269881	11.730119	8.269956	11.730044	10.000075	9.999925	56	44
17	15	8.271574	11.728426	8.271650	11.728350	10.000076	9.999924	45	43
18	30	8.273267	11.726740	8.273343	11.726663	10.000076	9.999924	30	42
19	45	8.274940	11.725060	8.275017	11.724983	10.000077	9.999923	15	41
20	5	8.276614	11.723386	8.276691	11.723309	10.000078	9.999922	55	40
21	15	8.278281	11.721719	8.278359	11.721641	10.000078	9.999922	45	39
22	30	8.279941	11.720059	8.280020	11.719980	10.000079	9.999921	30	38
23	45	8.281595	11.718405	8.281675	11.718325	10.000080	9.999921	15	37
24	6	8.283243	11.716757	8.283323	11.716677	10.000080	9.999920	54	36
25	15	8.284885	11.715115	8.284966	11.715034	10.000081	9.999919	45	35
26	30	8.286521	11.713479	8.286602	11.713398	10.000081	9.999919	30	34
27	45	8.288150	11.711850	8.288232	11.711768	10.000082	9.999918	15	33
28	7	8.289773	11.710227	8.289856	11.710144	10.000083	9.999917	53	32
29	15	8.291391	11.708609	8.291474	11.708526	10.000083	9.999917	45	31
30	30	8.293002	11.706998	8.293086	11.706914	10.000084	9.999916	30	30
31	45	8.294607	11.705393	8.294692	11.705308	10.000084	9.999916	15	29
32	8	8.296207	11.703793	8.296292	11.703708	10.000085	9.999915	52	28
33	15	8.297800	11.702200	8.297886	11.702114	10.000086	9.999914	45	27
34	30	8.299388	11.700612	8.299474	11.700526	10.000086	9.999914	30	26
35	45	8.300970	11.699030	8.301057	11.698943	10.000087	9.999913	15	25
36	9	8.302546	11.697454	8.302633	11.697367	10.000088	9.999912	51	24
37	15	8.304116	11.695884	8.304205	11.695795	10.000088	9.999912	45	23
38	30	8.305681	11.694319	8.305770	11.694230	10.000089	9.999911	30	22
39	45	8.307240	11.692760	8.307330	11.692670	10.000090	9.999911	15	21
40	10	8.308794	11.691206	8.308884	11.691116	10.000090	9.999910	50	20
41	15	8.310342	11.689658	8.310433	11.689567	10.000091	9.999909	45	19
42	30	8.311885	11.688115	8.311976	11.688024	10.000091	9.999909	30	18
43	45	8.313422	11.686578	8.313514	11.686486	10.000092	9.999908	15	17
44	11	8.314954	11.685046	8.315046	11.684954	10.000093	9.999907	49	16
45	15	8.316480	11.683520	8.316573	11.683427	10.000093	9.999907	45	15
46	30	8.318001	11.681999	8.318095	11.681905	10.000094	9.999906	30	14
47	45	8.319516	11.680484	8.319611	11.680389	10.000095	9.999905	15	13
48	12	8.321027	11.678973	8.321122	11.678878	10.000095	9.999905	48	12
49	15	8.322532	11.677468	8.322628	11.677372	10.000096	9.999904	45	11
50	30	8.324032	11.675968	8.324128	11.675872	10.000097	9.999903	30	10
51	45	8.325527	11.674473	8.325624	11.674376	10.000097	9.999903	15	9
52	13	8.327016	11.672984	8.327114	11.672886	10.000098	9.999902	47	8
53	15	8.328501	11.671499	8.328599	11.671400	10.000099	9.999901	45	7
54	30	8.329980	11.670020	8.330080	11.669920	10.000099	9.999901	30	6
55	45	8.331455	11.668545	8.331555	11.668445	10.000100	9.999900	15	5
56	14	8.332924	11.667076	8.333025	11.666975	10.000101	9.999899	46	4
57	15	8.334389	11.665611	8.334490	11.665510	10.000101	9.999899	45	3
58	30	8.335848	11.664152	8.335950	11.664050	10.000102	9.999898	30	2
59	45	8.337303	11.662697	8.337406	11.662594	10.000103	9.999897	15	1
60	15	8.338753	11.661247	8.338856	11.661144	10.000103	9.999897	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 55'		LOG. SINES, &c.						88 deg.	

0 ^h 5 ^m .		LOG. SINES, &c. (t)						1 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	8.338753	11.661247	8.338856	11.661144	10.000103	9.999897	45	60
1	15	8.340198	11.659802	8.340302	11.659698	10.000104	9.999896	45	59
2	30	8.341638	11.658362	8.341743	11.658257	10.000105	9.999895	30	58
3	45	8.343074	11.656926	8.343179	11.656821	10.000105	9.999895	15	57
4	16	8.344504	11.655496	8.344610	11.655390	10.000106	9.999894	44	56
5	15	8.345930	11.654070	8.346037	11.653963	10.000107	9.999893	45	55
6	30	8.347352	11.652648	8.347459	11.652541	10.000108	9.999892	30	54
7	45	8.348768	11.651232	8.348877	11.651123	10.000108	9.999892	15	53
8	17	8.350180	11.649820	8.350289	11.649711	10.000109	9.999891	43	52
9	15	8.351588	11.648412	8.351698	11.648302	10.000110	9.999890	45	51
10	30	8.352991	11.647009	8.353101	11.646899	10.000110	9.999890	30	50
11	45	8.354398	11.645611	8.354501	11.645499	10.000111	9.999889	15	49
12	18	8.355783	11.644217	8.355895	11.644103	10.000112	9.999888	42	48
13	15	8.357173	11.642827	8.357285	11.642715	10.000113	9.999887	45	47
14	30	8.358558	11.641442	8.358671	11.641329	10.000113	9.999887	30	46
15	45	8.359939	11.640061	8.360053	11.639947	10.000114	9.999886	15	45
16	19	8.361315	11.638685	8.361430	11.638570	10.000115	9.999885	41	44
17	15	8.362687	11.637313	8.362802	11.637198	10.000115	9.999885	45	43
18	30	8.364054	11.635946	8.364171	11.635829	10.000116	9.999884	30	42
19	45	8.365418	11.634582	8.365535	11.634465	10.000117	9.999883	15	41
20	20	8.366777	11.633223	8.366894	11.633106	10.000118	9.999882	40	40
21	15	8.368132	11.631868	8.368250	11.631750	10.000118	9.999882	45	39
22	30	8.369482	11.630518	8.369601	11.630399	10.000119	9.999881	30	38
23	45	8.370829	11.629171	8.370948	11.629052	10.000120	9.999880	15	37
24	21	8.372171	11.627829	8.372291	11.627709	10.000121	9.999879	39	36
25	15	8.373509	11.626491	8.373630	11.626370	10.000121	9.999879	45	35
26	30	8.374843	11.625157	8.374965	11.625035	10.000122	9.999878	30	34
27	45	8.376173	11.623827	8.376296	11.623704	10.000123	9.999877	15	33
28	22	8.377499	11.622501	8.377622	11.622378	10.000124	9.999876	38	32
29	15	8.378821	11.621179	8.378945	11.621055	10.000124	9.999876	45	31
30	30	8.380138	11.619862	8.380263	11.619737	10.000125	9.999875	30	30
31	45	8.381452	11.618548	8.381578	11.618422	10.000126	9.999874	15	29
32	23	8.382762	11.617238	8.382889	11.617111	10.000127	9.999873	37	28
33	15	8.384068	11.615932	8.384195	11.615805	10.000127	9.999873	45	27
34	30	8.385370	11.614630	8.385498	11.614502	10.000128	9.999872	30	26
35	45	8.386668	11.613332	8.386797	11.613203	10.000129	9.999871	15	25
36	24	8.387962	11.612038	8.388092	11.611908	10.000130	9.999870	36	24
37	15	8.389253	11.610747	8.389383	11.610617	10.000130	9.999870	45	23
38	30	8.390539	11.609461	8.390670	11.609330	10.000131	9.999869	30	22
39	45	8.391822	11.608178	8.391954	11.608046	10.000132	9.999868	15	21
40	25	8.393101	11.606899	8.393234	11.606766	10.000133	9.999867	35	20
41	15	8.394376	11.605624	8.394509	11.605491	10.000134	9.999866	45	19
42	30	8.395647	11.604353	8.395782	11.604218	10.000134	9.999866	30	18
43	45	8.396915	11.603085	8.397050	11.602950	10.000135	9.999865	15	17
44	26	8.398179	11.601821	8.398315	11.601685	10.000136	9.999864	34	16
45	15	8.399440	11.600560	8.399576	11.600424	10.000137	9.999863	45	15
46	30	8.400696	11.599304	8.400834	11.599166	10.000138	9.999862	30	14
47	45	8.401949	11.598051	8.402088	11.597912	10.000138	9.999862	15	13
48	27	8.403199	11.596801	8.403338	11.596662	10.000139	9.999861	33	12
49	15	8.404445	11.595555	8.404585	11.595415	10.000140	9.999860	45	11
50	30	8.405687	11.594313	8.405828	11.594172	10.000141	9.999859	30	10
51	45	8.406926	11.593074	8.407068	11.592932	10.000142	9.999858	15	9
52	28	8.408161	11.591839	8.408304	11.591696	10.000142	9.999858	32	8
53	15	8.409393	11.590607	8.409536	11.590464	10.000143	9.999857	45	7
54	30	8.410621	11.589379	8.410765	11.589235	10.000144	9.999856	30	6
55	45	8.411846	11.588154	8.411991	11.588009	10.000145	9.999855	15	5
56	29	8.413068	11.586932	8.413213	11.586787	10.000146	9.999854	31	4
57	15	8.414286	11.585714	8.414432	11.585568	10.000146	9.999854	45	3
58	30	8.415500	11.584502	8.415647	11.584353	10.000147	9.999853	30	2
59	45	8.416711	11.583289	8.416859	11.583141	10.000148	9.999852	15	1
60	30	8.417919	11.582081	8.418068	11.581932	10.000149	9.999851	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5 ^h 54 ^m .		LOG. SINES, &c.						68 deg.	

0 ^h 6 ^m .		LOG. SINES, &c. (t.)						1 deg.		
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	'	sec.
0	30	8.417919	11.582081	8.418068	11.581932	10.000149	9.999851	30		60
1	15	8.419123	11.580877	8.419273	11.580727	10.000150	9.999850	45		59
2	30	8.420324	11.579676	8.420475	11.579525	10.000151	9.999849	30		58
3	45	8.421522	11.578478	8.421674	11.578326	10.000151	9.999849	15		57
4	31	8.422717	11.577283	8.422869	11.577131	10.000152	9.999848	29		56
5	15	8.423908	11.576092	8.424061	11.575939	10.000153	9.999847	45		55
6	30	8.425096	11.574904	8.425250	11.574750	10.000154	9.999846	30		54
7	45	8.426281	11.573719	8.426435	11.573565	10.000155	9.999845	15		53
8	32	8.427462	11.572538	8.427618	11.572382	10.000156	9.999844	28		52
9	15	8.428640	11.571360	8.428797	11.571203	10.000156	9.999844	45		51
10	30	8.429815	11.570185	8.429973	11.570027	10.000157	9.999843	30		50
11	45	8.430987	11.569013	8.431145	11.568855	10.000158	9.999842	15		49
12	33	8.432156	11.567844	8.432315	11.567685	10.000159	9.999841	27		48
13	15	8.433322	11.566678	8.433481	11.566519	10.000160	9.999840	45		47
14	30	8.434484	11.565516	8.434645	11.565355	10.000161	9.999839	30		46
15	45	8.435644	11.564356	8.435805	11.564195	10.000162	9.999838	15		45
16	34	8.436800	11.563200	8.436962	11.563038	10.000162	9.999838	26		44
17	15	8.437953	11.562047	8.438116	11.561884	10.000163	9.999837	45		43
18	30	8.439103	11.560897	8.439267	11.560733	10.000164	9.999836	30		42
19	45	8.440250	11.559750	8.440415	11.559585	10.000165	9.999835	15		41
20	35	8.441394	11.558606	8.441560	11.558440	10.000166	9.999834	25		40
21	15	8.442535	11.557465	8.442702	11.557298	10.000167	9.999833	45		39
22	30	8.443674	11.556326	8.443841	11.556159	10.000168	9.999832	30		38
23	45	8.444809	11.555191	8.444977	11.555023	10.000169	9.999831	15		37
24	36	8.445941	11.554059	8.446110	11.553890	10.000169	9.999831	24		36
25	15	8.447070	11.552930	8.447240	11.552760	10.000170	9.999830	45		35
26	30	8.448196	11.551804	8.448367	11.551633	10.000171	9.999829	30		34
27	45	8.449320	11.550680	8.449492	11.550508	10.000172	9.999828	15		33
28	37	8.450440	11.549560	8.450613	11.549387	10.000173	9.999827	23		32
29	15	8.451558	11.548442	8.451732	11.548268	10.000174	9.999826	45		31
30	30	8.452672	11.547328	8.452847	11.547153	10.000175	9.999825	30		30
31	45	8.453784	11.546216	8.453960	11.546040	10.000176	9.999824	15		29
32	38	8.454893	11.545107	8.455070	11.544930	10.000177	9.999823	22		28
33	15	8.456000	11.544000	8.456177	11.543823	10.000177	9.999823	45		27
34	30	8.457103	11.542897	8.457281	11.542719	10.000178	9.999822	30		26
35	45	8.458203	11.541797	8.458383	11.541617	10.000179	9.999821	15		25
36	39	8.459301	11.540699	8.459481	11.540519	10.000180	9.999820	21		24
37	15	8.460396	11.539604	8.460577	11.539423	10.000181	9.999819	45		23
38	30	8.461489	11.538511	8.461670	11.538330	10.000182	9.999818	30		22
39	45	8.462578	11.537422	8.462761	11.537239	10.000183	9.999817	15		21
40	40	8.463665	11.536335	8.463849	11.536151	10.000184	9.999816	20		20
41	15	8.464749	11.535251	8.464934	11.535066	10.000185	9.999815	45		19
42	30	8.465830	11.534170	8.466016	11.533984	10.000186	9.999814	30		18
43	45	8.466909	11.533091	8.467095	11.532905	10.000187	9.999813	15		17
44	41	8.467985	11.532015	8.468172	11.531828	10.000188	9.999812	19		16
45	15	8.469058	11.530942	8.469247	11.530753	10.000188	9.999811	45		15
46	30	8.470129	11.529871	8.470318	11.529682	10.000189	9.999811	30		14
47	45	8.471197	11.528803	8.471387	11.528613	10.000190	9.999810	15		13
48	42	8.472263	11.527737	8.472454	11.527546	10.000191	9.999809	18		12
49	15	8.473325	11.526675	8.473517	11.526483	10.000192	9.999808	45		11
50	30	8.474386	11.525614	8.474579	11.525421	10.000193	9.999807	30		10
51	45	8.475443	11.524557	8.475637	11.524363	10.000194	9.999806	15		9
52	43	8.476498	11.523502	8.476693	11.523307	10.000195	9.999805	17		8
53	15	8.477551	11.522449	8.477747	11.522253	10.000196	9.999804	45		7
54	30	8.478601	11.521399	8.478798	11.521202	10.000197	9.999803	30		6
55	45	8.479648	11.520352	8.479846	11.520154	10.000198	9.999802	15		5
56	44	8.480693	11.519307	8.480892	11.519108	10.000199	9.999801	16		4
57	15	8.481736	11.518264	8.481935	11.518065	10.000200	9.999800	45		3
58	30	8.482775	11.517225	8.482976	11.517024	10.000201	9.999799	30		2
59	45	8.483813	11.516187	8.484015	11.515985	10.000202	9.999798	15		1
60	45	8.484848	11.515152	8.485050	11.514950	10.000203	9.999797	15		0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	'	sec.
5 ^h 53 ^m .		LOG. SINES, &c.						58 deg.		

0 ^h 7 ^m .		LOG. SINES, &c. (t)						1 deg.	
sec.	"	sine.	secant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	8.484848	11.515152	8.485050	11.514950	10.000203	9.999797	15	60
1	15	8.485880	11.514120	8.486084	11.513916	10.000204	9.999796	45	59
2	30	8.486910	11.513090	8.487115	11.512885	10.000205	9.999795	30	58
3	45	8.487938	11.512062	8.488143	11.511857	10.000206	9.999794	15	57
4	46	8.488963	11.511037	8.489170	11.510830	10.000207	9.999793	14	56
5	15	8.489986	11.510014	8.490193	11.509807	10.000208	9.999792	45	55
6	30	8.491006	11.508994	8.491213	11.508785	10.000208	9.999792	30	54
7	45	8.492024	11.507976	8.492234	11.507766	10.000209	9.999791	15	53
8	47	8.493040	11.506960	8.493250	11.506750	10.000210	9.999790	13	52
9	15	8.494053	11.505947	8.494264	11.505736	10.000211	9.999789	45	51
10	30	8.495064	11.504936	8.495276	11.504724	10.000212	9.999788	30	50
11	45	8.496072	11.503928	8.496286	11.503714	10.000213	9.999787	15	49
12	48	8.497078	11.502922	8.497293	11.502707	10.000214	9.999786	12	48
13	15	8.498082	11.501918	8.498298	11.501702	10.000215	9.999785	45	47
14	30	8.499084	11.500916	8.499300	11.500700	10.000216	9.999784	30	46
15	45	8.500083	11.499917	8.500300	11.499700	10.000217	9.999783	15	45
16	49	8.501080	11.498920	8.501298	11.498702	10.000218	9.999782	11	44
17	15	8.502074	11.497926	8.502294	11.497706	10.000219	9.999781	45	43
18	30	8.503067	11.496933	8.503287	11.496713	10.000220	9.999780	30	42
19	45	8.504057	11.495943	8.504278	11.495722	10.000221	9.999779	15	41
20	50	8.505045	11.494955	8.505267	11.494733	10.000222	9.999778	10	40
21	15	8.506030	11.493970	8.506254	11.493746	10.000223	9.999777	45	39
22	30	8.507014	11.492986	8.507238	11.492762	10.000224	9.999776	30	38
23	45	8.507995	11.492005	8.508220	11.491780	10.000225	9.999775	15	37
24	51	8.508974	11.491026	8.509200	11.490800	10.000226	9.999774	9	36
25	15	8.509950	11.490050	8.510178	11.489822	10.000227	9.999773	45	35
26	30	8.510925	11.489075	8.511153	11.488847	10.000229	9.999771	30	34
27	45	8.511897	11.488103	8.512127	11.487873	10.000230	9.999770	15	33
28	52	8.512867	11.487133	8.513098	11.486902	10.000231	9.999769	8	32
29	15	8.513835	11.486165	8.514067	11.485933	10.000232	9.999768	45	31
30	30	8.514801	11.485199	8.515034	11.484966	10.000233	9.999767	30	30
31	45	8.515765	11.484235	8.515998	11.484002	10.000234	9.999766	15	29
32	53	8.516726	11.483274	8.516961	11.483039	10.000235	9.999765	7	28
33	15	8.517686	11.482314	8.517921	11.482079	10.000236	9.999764	45	27
34	30	8.518643	11.481357	8.518880	11.481120	10.000237	9.999763	30	26
35	45	8.519598	11.480402	8.519836	11.480164	10.000238	9.999762	15	25
36	54	8.520551	11.479449	8.520790	11.479210	10.000239	9.999761	6	24
37	15	8.521502	11.478498	8.521742	11.478258	10.000240	9.999760	45	23
38	30	8.522451	11.477549	8.522692	11.477308	10.000241	9.999759	30	22
39	45	8.523398	11.476602	8.523640	11.476360	10.000242	9.999758	15	21
40	55	8.524343	11.475657	8.524586	11.475414	10.000243	9.999757	5	20
41	15	8.525286	11.474714	8.525530	11.474470	10.000244	9.999756	45	19
42	30	8.526226	11.473774	8.526472	11.473528	10.000245	9.999755	30	18
43	45	8.527165	11.472835	8.527411	11.472589	10.000246	9.999754	15	17
44	56	8.528102	11.471898	8.528349	11.471651	10.000247	9.999753	4	16
45	15	8.529036	11.470964	8.529285	11.470715	10.000248	9.999752	45	15
46	30	8.529969	11.470031	8.530218	11.469782	10.000249	9.999751	30	14
47	45	8.530899	11.469101	8.531150	11.468850	10.000251	9.999749	15	13
48	57	8.531828	11.468172	8.532080	11.467920	10.000252	9.999748	3	12
49	15	8.532755	11.467245	8.533007	11.466993	10.000253	9.999747	45	11
50	30	8.533679	11.466321	8.533933	11.466067	10.000254	9.999746	30	10
51	45	8.534602	11.465398	8.534857	11.465143	10.000255	9.999745	15	9
52	58	8.535523	11.464477	8.535779	11.464221	10.000256	9.999744	2	8
53	15	8.536442	11.463558	8.536699	11.463301	10.000257	9.999743	45	7
54	30	8.537358	11.462642	8.537616	11.462384	10.000258	9.999742	30	6
55	45	8.538273	11.461727	8.538532	11.461468	10.000259	9.999741	15	5
56	59	8.539186	11.460814	8.539447	11.460553	10.000260	9.999740	1	4
57	15	8.540097	11.459903	8.540359	11.459641	10.000261	9.999739	45	3
58	30	8.541007	11.458993	8.541269	11.458731	10.000262	9.999738	30	2
59	45	8.541914	11.458086	8.542177	11.457823	10.000264	9.999736	15	1
60	60	8.542819	11.457181	8.543084	11.456916	10.000265	9.999735	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5 ^h 52 ^m .		LOG SINES, &c.						88 deg.	

0° 9m.		LOG. SINES, &c. (t.)						2 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	8.542819	11.457181	8.543084	11.456916	10.000265	9.999735	60	60
1	15	8.543723	11.456277	8.543988	11.456012	10.000266	9.999734	45	59
2	30	8.544624	11.455376	8.544891	11.455109	10.000267	9.999733	30	58
3	45	8.545524	11.454476	8.545792	11.454208	10.000268	9.999732	15	57
4	1	8.546422	11.453578	8.546691	11.453309	10.000269	9.999731	59	56
5	15	8.547318	11.452682	8.547588	11.452412	10.000270	9.999730	45	55
6	30	8.548212	11.451788	8.548483	11.451517	10.000271	9.999729	30	54
7	45	8.549104	11.450893	8.549377	11.450623	10.000272	9.999728	15	53
8	2	8.549995	11.450005	8.550268	11.449732	10.000274	9.999726	58	52
9	15	8.550883	11.449117	8.551158	11.448842	10.000275	9.999725	45	51
10	30	8.551770	11.448230	8.552046	11.447954	10.000276	9.999724	30	50
11	45	8.552655	11.447345	8.552932	11.447068	10.000277	9.999723	15	49
12	3	8.553539	11.446461	8.553817	11.446183	10.000278	9.999722	57	48
13	15	8.554420	11.445580	8.554699	11.445301	10.000279	9.999721	45	47
14	30	8.555300	11.444700	8.555580	11.444420	10.000280	9.999720	30	46
15	45	8.556177	11.443823	8.556459	11.443541	10.000281	9.999719	15	45
16	4	8.557054	11.442946	8.557336	11.442664	10.000283	9.999717	56	44
17	15	8.557928	11.442072	8.558212	11.441788	10.000284	9.999716	45	43
18	30	8.558800	11.441200	8.559085	11.440915	10.000285	9.999715	30	42
19	45	8.559671	11.440329	8.559957	11.440043	10.000286	9.999714	15	41
20	5	8.560540	11.439460	8.560828	11.439172	10.000287	9.999713	55	40
21	15	8.561408	11.438592	8.561696	11.438304	10.000288	9.999712	45	39
22	30	8.562273	11.437727	8.562563	11.437437	10.000290	9.999710	30	38
23	45	8.563137	11.436863	8.563428	11.436572	10.000291	9.999709	15	37
24	6	8.563999	11.436001	8.564291	11.435709	10.000292	9.999708	54	36
25	15	8.564860	11.435140	8.565153	11.434847	10.000293	9.999707	45	35
26	30	8.565719	11.434281	8.566013	11.433987	10.000294	9.999706	30	34
27	45	8.566576	11.433424	8.566871	11.433129	10.000295	9.999705	15	33
28	7	8.567431	11.432569	8.567727	11.432273	10.000296	9.999704	53	32
29	15	8.568285	11.431715	8.568582	11.431418	10.000298	9.999702	45	31
30	30	8.569137	11.430863	8.569435	11.430565	10.000299	9.999701	30	30
31	45	8.569987	11.430013	8.570287	11.429713	10.000300	9.999700	15	29
32	8	8.570836	11.429164	8.571137	11.428863	10.000301	9.999699	52	28
33	15	8.571683	11.428317	8.571985	11.428015	10.000302	9.999698	45	27
34	30	8.572528	11.427472	8.572832	11.427168	10.000304	9.999696	30	26
35	45	8.573372	11.426628	8.573676	11.426324	10.000305	9.999695	15	25
36	9	8.574214	11.425786	8.574520	11.425480	10.000306	9.999694	51	24
37	15	8.575054	11.424946	8.575361	11.424639	10.000307	9.999693	45	23
38	30	8.575893	11.424107	8.576201	11.423799	10.000308	9.999692	30	22
39	45	8.576730	11.423270	8.577040	11.422960	10.000309	9.999691	15	21
40	10	8.577566	11.422434	8.577877	11.422123	10.000311	9.999689	50	20
41	15	8.578400	11.421600	8.578712	11.421288	10.000312	9.999688	45	19
42	30	8.579232	11.420768	8.579545	11.420455	10.000313	9.999687	30	18
43	45	8.580063	11.419937	8.580377	11.419623	10.000314	9.999686	15	17
44	11	8.580892	11.419108	8.581208	11.418792	10.000315	9.999685	49	16
45	15	8.581720	11.418280	8.582036	11.417964	10.000317	9.999683	45	15
46	30	8.582546	11.417454	8.582864	11.417136	10.000318	9.999682	30	14
47	45	8.583370	11.416630	8.583689	11.416311	10.000319	9.999681	15	13
48	12	8.584193	11.415807	8.584514	11.415486	10.000320	9.999680	48	12
49	15	8.585015	11.414985	8.585336	11.414664	10.000321	9.999679	45	11
50	30	8.585834	11.414166	8.586157	11.413843	10.000323	9.999677	30	10
51	45	8.586653	11.413347	8.586977	11.413023	10.000324	9.999676	15	9
52	13	8.587469	11.412531	8.587794	11.412206	10.000325	9.999675	47	8
53	15	8.588285	11.411715	8.588611	11.411389	10.000326	9.999674	45	7
54	30	8.589098	11.410902	8.589426	11.410574	10.000328	9.999672	30	6
55	45	8.589910	11.410090	8.590239	11.409761	10.000329	9.999671	15	5
56	14	8.590721	11.409279	8.591051	11.408949	10.000330	9.999670	46	4
57	15	8.591530	11.408470	8.591861	11.408139	10.000331	9.999669	45	3
58	30	8.592338	11.407662	8.592670	11.407330	10.000333	9.999667	30	2
59	45	8.593144	11.406856	8.593477	11.406523	10.000334	9.999666	15	1
60	15	8.593948	11.406052	8.594283	11.405717	10.000335	9.999665	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 51m.		LOG. SINES, &c.						67 deg.	

0 ^h 9 ^m .		LOG. SINES, &c. (L)						2 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"
0	15	8.593948	11.406052	8.594283	11.405717	10.000335	9.999665		45
1	15	8.594751	11.405249	8.595087	11.404913	10.000336	9.999664		45
2	30	8.595553	11.404447	8.595890	11.404110	10.000337	9.999663		30
3	45	8.596353	11.403647	8.596692	11.403308	10.000339	9.999661		15
4	16	8.597152	11.402848	8.597492	11.402508	10.000340	9.999660		44
5	15	8.597949	11.402051	8.598290	11.401710	10.000341	9.999659		45
6	30	8.598745	11.401255	8.599087	11.400913	10.000342	9.999658		30
7	45	8.599539	11.400461	8.599883	11.400117	10.000344	9.999656		15
8	17	8.600332	11.399668	8.600677	11.399323	10.000345	9.999655		43
9	15	8.601123	11.398877	8.601469	11.398531	10.000346	9.999654		45
10	30	8.601913	11.398087	8.602260	11.397740	10.000348	9.999652		30
11	45	8.602701	11.397299	8.603050	11.396950	10.000349	9.999651		15
12	18	8.603489	11.396511	8.603839	11.396161	10.000350	9.999650		42
13	15	8.604274	11.395726	8.604625	11.395374	10.000351	9.999649		45
14	30	8.605058	11.394942	8.605411	11.394589	10.000353	9.999647		30
15	45	8.605841	11.394159	8.606195	11.393805	10.000354	9.999646		15
16	19	8.606623	11.393377	8.606978	11.393022	10.000355	9.999645		41
17	15	8.607403	11.392597	8.607759	11.392241	10.000356	9.999644		45
18	30	8.608181	11.391819	8.608539	11.391461	10.000358	9.999642		30
19	45	8.608958	11.391042	8.609317	11.390683	10.000359	9.999641		15
20	20	8.609734	11.390266	8.610094	11.389906	10.000360	9.999640		40
21	15	8.610508	11.389492	8.610870	11.389130	10.000362	9.999638		45
22	30	8.611281	11.388719	8.611644	11.388356	10.000363	9.999637		30
23	45	8.612053	11.387947	8.612417	11.387583	10.000364	9.999636		15
24	21	8.612823	11.387177	8.613189	11.386811	10.000365	9.999635		39
25	15	8.613592	11.386408	8.613959	11.386041	10.000367	9.999633		45
26	30	8.614360	11.385640	8.614728	11.385272	10.000368	9.999632		30
27	45	8.615126	11.384874	8.615495	11.384505	10.000369	9.999631		15
28	22	8.615891	11.384109	8.616262	11.383738	10.000371	9.999629		38
29	15	8.616654	11.383346	8.617026	11.382974	10.000372	9.999628		45
30	30	8.617417	11.382583	8.617790	11.382210	10.000373	9.999627		30
31	45	8.618177	11.381823	8.618552	11.381448	10.000375	9.999625		15
32	23	8.618937	11.381063	8.619313	11.380687	10.000376	9.999624		37
33	15	8.619695	11.380305	8.620072	11.379928	10.000377	9.999623		45
34	30	8.620452	11.379548	8.620830	11.379170	10.000379	9.999621		30
35	45	8.621207	11.378793	8.621587	11.378413	10.000380	9.999620		15
36	24	8.621962	11.378038	8.622343	11.377657	10.000381	9.999619		36
37	15	8.622714	11.377285	8.623097	11.376903	10.000382	9.999618		45
38	30	8.623466	11.376534	8.623850	11.376150	10.000384	9.999616		30
39	45	8.624216	11.375784	8.624601	11.375399	10.000385	9.999615		15
40	25	8.624965	11.375035	8.625352	11.374648	10.000386	9.999614		35
41	15	8.625713	11.374287	8.626101	11.373899	10.000388	9.999612		45
42	30	8.626459	11.373541	8.626848	11.373152	10.000389	9.999611		30
43	45	8.627205	11.372795	8.627595	11.372405	10.000390	9.999610		15
44	26	8.627948	11.372052	8.628340	11.371660	10.000392	9.999608		34
45	15	8.628691	11.371309	8.629084	11.370916	10.000393	9.999607		45
46	30	8.629432	11.370568	8.629827	11.370173	10.000395	9.999605		30
47	45	8.630172	11.369828	8.630568	11.369432	10.000396	9.999604		15
48	27	8.630911	11.369089	8.631308	11.368692	10.000397	9.999603		33
49	15	8.631649	11.368351	8.632047	11.367953	10.000399	9.999601		45
50	30	8.632385	11.367615	8.632785	11.367215	10.000400	9.999600		30
51	45	8.633120	11.366880	8.633521	11.366479	10.000401	9.999599		15
52	28	8.633854	11.366146	8.634256	11.365744	10.000403	9.999597		32
53	15	8.634586	11.365414	8.634990	11.365010	10.000404	9.999596		45
54	30	8.635317	11.364683	8.635723	11.364277	10.000405	9.999595		30
55	45	8.636048	11.363952	8.636454	11.363546	10.000407	9.999593		15
56	29	8.636776	11.363224	8.637184	11.362816	10.000408	9.999592		31
57	15	8.637501	11.362496	8.637913	11.362087	10.000409	9.999591		45
58	30	8.638230	11.361770	8.638641	11.361359	10.000411	9.999589		30
59	45	8.638956	11.361044	8.639368	11.360632	10.000412	9.999588		15
60	30	8.639680	11.360320	8.640093	11.359907	10.000414	9.999586		30
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"
5 ^h 50 ^m .		LOG. SINES, &c.						57 deg.	

0 ^h 10 ^m .		LOG. SINES, &c. (L.)						2 deg.		
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	co-sine.	"	"	sec.
0	30	8.639880	11.360320	8.640093	11.359907	10.000414	9.999586	30		60
1	15	8.640402	11.359598	8.640817	11.359183	10.000415	9.999585	45		59
2	30	8.641124	11.358876	8.641540	11.358460	10.000416	9.999584	30		58
3	45	8.641844	11.358156	8.642262	11.357738	10.000418	9.999582	15		57
4	31	8.642563	11.357437	8.642982	11.357018	10.000419	9.999581	29		56
5	15	8.643281	11.356719	8.643702	11.356298	10.000421	9.999579	45		55
6	30	8.643998	11.356002	8.644420	11.355580	10.000422	9.999578	30		54
7	45	8.644714	11.355286	8.645137	11.354863	10.000423	9.999577	15		53
8	32	8.645428	11.354572	8.645853	11.354147	10.000425	9.999575	28		52
9	15	8.646141	11.353859	8.646567	11.353433	10.000426	9.999574	45		51
10	30	8.646853	11.353147	8.647281	11.352719	10.000428	9.999572	30		50
11	45	8.647564	11.352436	8.647993	11.352007	10.000429	9.999571	15		49
12	33	8.648274	11.351726	8.648704	11.351296	10.000430	9.999570	27		48
13	15	8.648983	11.351017	8.649414	11.350586	10.000432	9.999568	45		47
14	30	8.649690	11.350310	8.650123	11.349877	10.000433	9.999567	30		46
15	45	8.650396	11.349604	8.650831	11.349169	10.000435	9.999565	15		45
16	34	8.651102	11.348898	8.651537	11.348463	10.000436	9.999564	26		44
17	15	8.651806	11.348194	8.652243	11.347757	10.000437	9.999563	45		43
18	30	8.652508	11.347492	8.652947	11.347053	10.000439	9.999561	30		42
19	45	8.653210	11.346790	8.653650	11.346350	10.000440	9.999560	15		41
20	35	8.653911	11.346039	8.654352	11.345648	10.000442	9.999558	25		40
21	15	8.654610	11.345390	8.655053	11.344947	10.000443	9.999557	45		39
22	30	8.655308	11.344692	8.655753	11.344247	10.000444	9.999556	30		38
23	45	8.656006	11.343994	8.656451	11.343549	10.000446	9.999554	15		37
24	36	8.656702	11.343298	8.657149	11.342851	10.000447	9.999553	24		36
25	15	8.657397	11.342603	8.657845	11.342155	10.000449	9.999551	45		35
26	30	8.658090	11.341910	8.658541	11.341459	10.000450	9.999550	30		34
27	45	8.658783	11.341217	8.659235	11.340765	10.000452	9.999548	15		33
28	37	8.659475	11.340525	8.659928	11.340072	10.000453	9.999547	23		32
29	15	8.660165	11.339835	8.660620	11.339380	10.000455	9.999545	45		31
30	30	8.660855	11.339145	8.661311	11.338689	10.000456	9.999544	30		30
31	45	8.661543	11.338457	8.662000	11.338000	10.000457	9.999543	15		29
32	38	8.662230	11.337770	8.662689	11.337311	10.000459	9.999541	22		28
33	15	8.662916	11.337084	8.663377	11.336623	10.000460	9.999540	45		27
34	30	8.663601	11.336399	8.664063	11.335937	10.000462	9.999538	30		26
35	45	8.664285	11.335715	8.664749	11.335251	10.000463	9.999537	15		25
36	39	8.664968	11.335032	8.665433	11.334567	10.000465	9.999535	21		24
37	15	8.665650	11.334350	8.666116	11.333884	10.000466	9.999534	45		23
38	30	8.666331	11.333669	8.666799	11.333201	10.000468	9.999532	30		22
39	45	8.667011	11.332989	8.667480	11.332520	10.000469	9.999531	15		21
40	40	8.667689	11.332311	8.668160	11.331840	10.000470	9.999530	20		20
41	15	8.668367	11.331633	8.668839	11.331161	10.000472	9.999528	45		19
42	30	8.669043	11.330957	8.669517	11.330483	10.000474	9.999526	30		18
43	45	8.669719	11.330281	8.670194	11.329806	10.000475	9.999525	15		17
44	41	8.670393	11.329607	8.670870	11.329130	10.000476	9.999524	19		16
45	15	8.671067	11.328933	8.671544	11.328456	10.000478	9.999522	45		15
46	30	8.671739	11.328261	8.672218	11.327782	10.000479	9.999521	30		14
47	45	8.672410	11.327590	8.672891	11.327109	10.000481	9.999519	15		13
48	42	8.673080	11.326920	8.673563	11.326437	10.000482	9.999518	18		12
49	15	8.673750	11.326250	8.674233	11.325767	10.000484	9.999516	45		11
50	30	8.674418	11.325582	8.674903	11.325097	10.000485	9.999515	30		10
51	45	8.675085	11.324915	8.675572	11.324428	10.000487	9.999513	15		9
52	43	8.675751	11.324249	8.676239	11.323761	10.000488	9.999512	17		8
53	15	8.676416	11.323584	8.676906	11.323094	10.000490	9.999510	45		7
54	30	8.677080	11.322920	8.677571	11.322429	10.000491	9.999509	30		6
55	45	8.677743	11.322257	8.678236	11.321764	10.000493	9.999507	15		5
56	44	8.678405	11.321595	8.678900	11.321100	10.000494	9.999506	16		4
57	15	8.679066	11.320934	8.679562	11.320438	10.000496	9.999504	45		3
58	30	8.679726	11.320274	8.680224	11.319776	10.000497	9.999503	30		2
59	45	8.680385	11.319615	8.680884	11.319116	10.000499	9.999501	15		1
60	45	8.681043	11.318957	8.681544	11.318456	10.000500	9.999500	15		0
sec.	"	cosine.	secant.	cotangent.	tangent.	co-secant.	sine.	"	"	sec.
5 ^h 49 ^m		LOG. SINES, &c.						57 deg.		

0° 11 ^m .		LOG. SINES, &c. (L.)						2 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	8.681043	11.318957	8.681544	11.318456	10.000500	9.999500	15	60
1	15	8.681700	11.318300	8.682202	11.317798	10.000502	9.999498	45	59
2	30	8.682356	11.317644	8.682860	11.317140	10.000504	9.999496	30	58
3	45	8.683011	11.316989	8.683516	11.316484	10.000505	9.999495	15	57
4	46	8.683665	11.316335	8.684172	11.315828	10.000507	9.999493	14	56
5	15	8.684318	11.315682	8.684826	11.315174	10.000508	9.999492	45	55
6	30	8.684971	11.315029	8.685480	11.314520	10.000510	9.999490	30	54
7	45	8.685622	11.314378	8.686133	11.313867	10.000511	9.999489	15	53
8	47	8.686272	11.313728	8.686784	11.313216	10.000513	9.999487	13	52
9	15	8.686921	11.313079	8.687435	11.312565	10.000514	9.999486	45	51
10	30	8.687569	11.312431	8.688085	11.311915	10.000516	9.999484	30	50
11	45	8.688216	11.311784	8.688733	11.311267	10.000517	9.999483	15	49
12	48	8.688862	11.311138	8.689381	11.310619	10.000519	9.999481	12	48
13	15	8.689508	11.310492	8.690028	11.309972	10.000520	9.999480	45	47
14	30	8.690152	11.309848	8.690674	11.309326	10.000522	9.999478	30	46
15	45	8.690795	11.309205	8.691319	11.308681	10.000523	9.999477	15	45
16	49	8.691438	11.308562	8.691963	11.308037	10.000525	9.999475	11	44
17	15	8.692079	11.307921	8.692606	11.307394	10.000527	9.999473	45	43
18	30	8.692720	11.307280	8.693248	11.306752	10.000528	9.999472	30	42
19	45	8.693359	11.306641	8.693889	11.306111	10.000530	9.999470	15	41
20	50	8.693998	11.306002	8.694529	11.305471	10.000531	9.999469	10	40
21	15	8.694636	11.305364	8.695168	11.304832	10.000533	9.999467	45	39
22	30	8.695272	11.304728	8.695807	11.304193	10.000534	9.999466	30	38
23	45	8.695908	11.304092	8.696444	11.303556	10.000536	9.999464	15	37
24	51	8.696543	11.303457	8.697081	11.302919	10.000538	9.999462	9	36
25	15	8.697177	11.302823	8.697716	11.302284	10.000539	9.999461	45	35
26	30	8.697810	11.302190	8.698351	11.301649	10.000541	9.999459	30	34
27	45	8.698442	11.301558	8.698984	11.301016	10.000542	9.999458	15	33
28	52	8.699073	11.300927	8.699617	11.300383	10.000544	9.999456	8	32
29	15	8.699704	11.300296	8.700249	11.299751	10.000545	9.999455	45	31
30	30	8.700333	11.299667	8.700880	11.299120	10.000547	9.999453	30	30
31	45	8.700961	11.299039	8.701510	11.298490	10.000549	9.999451	15	29
32	53	8.701589	11.298411	8.702139	11.297861	10.000550	9.999450	7	28
33	15	8.702215	11.297785	8.702767	11.297233	10.000552	9.999448	45	27
34	30	8.702841	11.297159	8.703395	11.296605	10.000553	9.999447	30	26
35	45	8.703466	11.296534	8.704021	11.295979	10.000555	9.999445	15	25
36	54	8.704090	11.295910	8.704646	11.295354	10.000557	9.999443	6	24
37	15	8.704713	11.295287	8.705271	11.294729	10.000558	9.999442	45	23
38	30	8.705335	11.294665	8.705895	11.294105	10.000560	9.999440	30	22
39	45	8.705956	11.294044	8.706518	11.293482	10.000561	9.999439	15	21
40	55	8.706577	11.293423	8.707139	11.292861	10.000563	9.999437	5	20
41	15	8.707196	11.292804	8.707761	11.292239	10.000565	9.999435	45	19
42	30	8.707815	11.292185	8.708381	11.291619	10.000566	9.999434	30	18
43	45	8.708432	11.291568	8.709000	11.291000	10.000568	9.999432	15	17
44	56	8.709049	11.290951	8.709618	11.290382	10.000569	9.999431	4	16
45	15	8.709665	11.290335	8.710236	11.289764	10.000571	9.999429	45	15
46	30	8.710280	11.289720	8.710853	11.289147	10.000573	9.999427	30	14
47	45	8.710894	11.289106	8.711468	11.288532	10.000574	9.999426	15	13
48	57	8.711507	11.288493	8.712083	11.287917	10.000576	9.999424	3	12
49	15	8.712120	11.287880	8.712697	11.287303	10.000578	9.999422	45	11
50	30	8.712731	11.287269	8.713311	11.286689	10.000579	9.999421	30	10
51	45	8.713342	11.286658	8.713923	11.286077	10.000581	9.999419	15	9
52	58	8.713952	11.286048	8.714534	11.285466	10.000582	9.999418	2	8
53	15	8.714561	11.285439	8.715145	11.284855	10.000584	9.999416	45	7
54	30	8.715169	11.284831	8.715755	11.284245	10.000586	9.999414	30	6
55	45	8.715776	11.284224	8.716364	11.283636	10.000587	9.999413	15	5
56	59	8.716383	11.283617	8.716972	11.283025	10.000589	9.999411	1	4
57	15	8.716988	11.283012	8.717579	11.282421	10.000591	9.999409	45	3
58	30	8.717593	11.282407	8.718185	11.281815	10.000592	9.999408	30	2
59	45	8.718197	11.281803	8.718791	11.281209	10.000594	9.999406	15	1
60	60	8.718800	11.281200	8.719396	11.280604	10.000596	9.999404	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 48 ^m .		LOG. SINES, &c.						87 deg.	

0° 12°.		LOG. SINES, &c. (t.)						3 deg.	
sec.		sine.	cosecant.	tangent.	cotangent.	secant.	cosec.		sec.
0	0	8.718800	11.281200	8.719396	11.280604	10.000596	9.999404	60	60
1	15	8.719402	11.280598	8.720000	11.280000	10.000597	9.999403	45	59
2	30	8.720004	11.279996	8.720603	11.279397	10.000599	9.999401	30	58
3	45	8.720604	11.279396	8.721205	11.278795	10.000601	9.999399	15	57
4	1	8.721204	11.278796	8.721806	11.278194	10.000602	9.999398	59	56
5	15	8.721803	11.278197	8.722407	11.277593	10.000604	9.999396	45	55
6	30	8.722401	11.277599	8.723006	11.276994	10.000606	9.999394	30	54
7	45	8.722998	11.277002	8.723605	11.276395	10.000607	9.999393	15	53
8	2	8.723595	11.276405	8.724203	11.275797	10.000609	9.999391	58	52
9	15	8.724190	11.275810	8.724801	11.275199	10.000611	9.999389	45	51
10	30	8.724785	11.275215	8.725397	11.274603	10.000612	9.999388	30	50
11	45	8.725379	11.274621	8.725993	11.274007	10.000614	9.999386	15	49
12	3	8.725972	11.274028	8.726588	11.273412	10.000616	9.999384	57	48
13	15	8.726564	11.273436	8.727182	11.272818	10.000617	9.999383	45	47
14	30	8.727156	11.272844	8.727775	11.272225	10.000619	9.999381	30	46
15	45	8.727747	11.272253	8.728367	11.271633	10.000621	9.999379	15	45
16	4	8.728337	11.271663	8.728959	11.271041	10.000622	9.999378	56	44
17	15	8.728926	11.271074	8.729550	11.270450	10.000624	9.999376	45	43
18	30	8.729514	11.270486	8.730140	11.269860	10.000626	9.999374	30	42
19	45	8.730101	11.269899	8.730729	11.269271	10.000628	9.999372	15	41
20	5	8.730688	11.269312	8.731317	11.268683	10.000629	9.999371	55	40
21	15	8.731274	11.268726	8.731905	11.268095	10.000631	9.999369	45	39
22	30	8.731859	11.268141	8.732492	11.267508	10.000633	9.999367	30	38
23	45	8.732444	11.267556	8.733078	11.266922	10.000634	9.999366	15	37
24	6	8.733027	11.266973	8.733663	11.266337	10.000636	9.999364	54	36
25	15	8.733610	11.266390	8.734248	11.265752	10.000638	9.999362	45	35
26	30	8.734192	11.265808	8.734831	11.265169	10.000639	9.999361	30	34
27	45	8.734773	11.265227	8.735414	11.264586	10.000641	9.999359	15	33
28	7	8.735353	11.264647	8.735996	11.264004	10.000643	9.999357	53	32
29	15	8.735933	11.264067	8.736578	11.263422	10.000645	9.999355	45	31
30	30	8.736512	11.263488	8.737158	11.262842	10.000646	9.999354	30	30
31	45	8.737090	11.262910	8.737738	11.262262	10.000648	9.999352	15	29
32	8	8.737667	11.262333	8.738317	11.261683	10.000650	9.999350	52	28
33	15	8.738244	11.261756	8.738895	11.261105	10.000652	9.999348	45	27
34	30	8.738820	11.261180	8.739473	11.260527	10.000653	9.999347	30	26
35	45	8.739395	11.260605	8.740050	11.259950	10.000655	9.999345	15	25
36	9	8.739969	11.260031	8.740626	11.259374	10.000657	9.999343	51	24
37	15	8.740543	11.259457	8.741201	11.258799	10.000658	9.999342	45	23
38	30	8.741115	11.258885	8.741775	11.258225	10.000660	9.999340	30	22
39	45	8.741687	11.258313	8.742349	11.257651	10.000662	9.999338	15	21
40	10	8.742259	11.257741	8.742922	11.257078	10.000664	9.999336	50	20
41	15	8.742829	11.257171	8.743494	11.256506	10.000665	9.999335	45	19
42	30	8.743399	11.256601	8.744066	11.255934	10.000667	9.999333	30	18
43	45	8.743968	11.256032	8.744637	11.255363	10.000669	9.999331	15	17
44	11	8.744536	11.255464	8.745207	11.254793	10.000671	9.999329	49	16
45	15	8.745103	11.254897	8.745776	11.254224	10.000672	9.999328	45	15
46	30	8.745670	11.254330	8.746344	11.253656	10.000674	9.999326	30	14
47	45	8.746236	11.253764	8.746912	11.253088	10.000676	9.999324	15	13
48	12	8.746801	11.253199	8.747479	11.252521	10.000678	9.999322	48	12
49	15	8.747366	11.252634	8.748045	11.251955	10.000680	9.999320	45	11
50	30	8.747930	11.252070	8.748611	11.251389	10.000681	9.999319	30	10
51	45	8.748493	11.251507	8.749176	11.250824	10.000683	9.999317	15	9
52	13	8.749055	11.250945	8.749740	11.250260	10.000685	9.999315	47	8
53	15	8.749617	11.250383	8.750303	11.249697	10.000687	9.999313	45	7
54	30	8.750178	11.249822	8.750866	11.249134	10.000688	9.999312	30	6
55	45	8.750738	11.249262	8.751428	11.248572	10.000690	9.999310	15	5
56	14	8.751297	11.248703	8.751989	11.248011	10.000692	9.999308	46	4
57	15	8.751856	11.248144	8.752550	11.247450	10.000694	9.999306	45	3
58	30	8.752414	11.247586	8.753109	11.246891	10.000696	9.999304	30	2
59	45	8.752971	11.247029	8.753668	11.246332	10.000697	9.999303	15	1
60	15	8.753528	11.246472	8.754227	11.245773	10.000699	9.999301	45	0
sec.		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
5° 47°.		LOG. SINES, &c.						86 deg.	

0° 13'		LOG. SINES, &c. (t)						3 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	8.753528	11.246472	8.754227	11.245773	10.000699	9.999301	45	60
1	15	8.754084	11.245916	8.754784	11.245216	10.000701	9.999299	45	59
2	30	8.754639	11.245361	8.755341	11.244659	10.000703	9.999297	30	58
3	45	8.755193	11.244807	8.755898	11.244102	10.000704	9.999296	15	57
4	16	8.755747	11.244253	8.756453	11.243547	10.000706	9.999294	44	56
5	15	8.756300	11.243700	8.757008	11.242992	10.000708	9.999292	45	55
6	30	8.756852	11.243148	8.757562	11.242438	10.000710	9.999290	30	54
7	45	8.757404	11.242596	8.758115	11.241885	10.000712	9.999288	15	53
8	17	8.757955	11.242045	8.758668	11.241332	10.000714	9.999286	43	52
9	15	8.758505	11.241495	8.759220	11.240780	10.000715	9.999285	45	51
10	30	8.759054	11.240946	8.759771	11.240229	10.000717	9.999283	30	50
11	45	8.759603	11.240397	8.760322	11.239678	10.000719	9.999281	15	49
12	18	8.760151	11.239849	8.760872	11.239128	10.000721	9.999279	42	48
13	15	8.760699	11.239301	8.761421	11.238579	10.000723	9.999277	45	47
14	30	8.761245	11.238755	8.761970	11.238030	10.000724	9.999276	30	46
15	45	8.761791	11.238209	8.762517	11.237483	10.000726	9.999274	15	45
16	19	8.762337	11.237663	8.763065	11.236935	10.000728	9.999272	41	44
17	15	8.762881	11.237119	8.763611	11.236389	10.000730	9.999270	45	43
18	30	8.763425	11.236575	8.764157	11.235843	10.000732	9.999268	30	42
19	45	8.763968	11.236032	8.764702	11.235298	10.000734	9.999266	15	41
20	20	8.764511	11.235489	8.765246	11.234754	10.000735	9.999265	40	40
21	15	8.765053	11.234947	8.765790	11.234210	10.000737	9.999263	45	39
22	30	8.765594	11.234406	8.766333	11.233667	10.000739	9.999261	30	38
23	45	8.766135	11.233865	8.766876	11.233124	10.000741	9.999259	15	37
24	21	8.766675	11.233325	8.767417	11.232583	10.000743	9.999257	39	36
25	15	8.767214	11.232786	8.767958	11.232042	10.000745	9.999255	45	35
26	30	8.767752	11.232248	8.768499	11.231501	10.000747	9.999253	30	34
27	45	8.768290	11.231710	8.769039	11.230961	10.000748	9.999252	15	33
28	22	8.768827	11.231173	8.769578	11.230422	10.000750	9.999250	38	32
29	15	8.769364	11.230636	8.770116	11.229884	10.000752	9.999248	45	31
30	30	8.769900	11.230100	8.770654	11.229346	10.000754	9.999246	30	30
31	45	8.770435	11.229565	8.771191	11.228809	10.000756	9.999244	15	29
32	23	8.770970	11.229030	8.771727	11.228273	10.000758	9.999242	37	28
33	15	8.771504	11.228496	8.772263	11.227737	10.000760	9.999240	45	27
34	30	8.772037	11.227963	8.772798	11.227202	10.000761	9.999239	30	26
35	45	8.772569	11.227431	8.773333	11.226667	10.000763	9.999237	15	25
36	24	8.773101	11.226899	8.773866	11.226134	10.000765	9.999235	36	24
37	15	8.773633	11.226367	8.774400	11.225600	10.000767	9.999233	45	23
38	30	8.774163	11.225837	8.774932	11.225068	10.000769	9.999231	30	22
39	45	8.774693	11.225307	8.775464	11.224536	10.000771	9.999229	15	21
40	25	8.775223	11.224777	8.775995	11.224005	10.000773	9.999227	35	20
41	15	8.775751	11.224249	8.776526	11.223474	10.000775	9.999225	45	19
42	30	8.776279	11.223721	8.777056	11.222944	10.000776	9.999224	30	18
43	45	8.776807	11.223193	8.777585	11.222415	10.000778	9.999222	15	17
44	26	8.777333	11.222667	8.778114	11.221886	10.000780	9.999220	34	16
45	15	8.777859	11.222141	8.778642	11.221358	10.000782	9.999218	45	15
46	30	8.778385	11.221615	8.779169	11.220831	10.000784	9.999216	30	14
47	45	8.778910	11.221090	8.779696	11.220304	10.000786	9.999214	15	13
48	27	8.779434	11.220566	8.780222	11.219778	10.000788	9.999212	33	12
49	15	8.779958	11.220042	8.780747	11.219253	10.000790	9.999210	45	11
50	30	8.780480	11.219520	8.781272	11.218728	10.000792	9.999208	30	10
51	45	8.781003	11.218997	8.781796	11.218204	10.000794	9.999206	15	9
52	28	8.781524	11.218476	8.782320	11.217680	10.000795	9.999205	32	8
53	15	8.782045	11.217955	8.782843	11.217157	10.000797	9.999203	45	7
54	30	8.782566	11.217434	8.783365	11.216635	10.000799	9.999201	30	6
55	45	8.783086	11.216914	8.783887	11.216113	10.000801	9.999199	15	5
56	29	8.783605	11.216395	8.784408	11.215592	10.000803	9.999197	31	4
57	15	8.784123	11.215877	8.784928	11.215072	10.000805	9.999195	45	3
58	30	8.784641	11.215359	8.785448	11.214552	10.000807	9.999193	30	2
59	45	8.785159	11.214841	8.785967	11.214033	10.000809	9.999191	15	1
60	30	8.785675	11.214325	8.786486	11.213514	10.000811	9.999189	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 46'		LOG. SINES, &c.						86 deg.	

0° 14'.		LOG. SINES, &c. (t.)						3 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	sec. pt.	cosine.	"	sec.
0	30	8.785675	11.214325	8.786486	11.213514	10.000811	9.999189	30	60
1	15	8.786191	11.213809	8.787004	11.212996	10.000813	9.999187	45	59
2	30	8.786707	11.213293	8.787521	11.212479	10.000815	9.999185	30	58
3	45	8.787222	11.212778	8.788038	11.211962	10.000817	9.999183	15	57
4	31	8.787736	11.212264	8.788554	11.211446	10.000819	9.999181	29	56
5	15	8.788249	11.211751	8.789070	11.210930	10.000821	9.999179	45	55
6	30	8.788762	11.211238	8.789585	11.210415	10.000822	9.999178	30	54
7	45	8.789275	11.210725	8.790099	11.209901	10.000824	9.999176	15	53
8	32	8.789787	11.210213	8.790613	11.209387	10.000826	9.999174	28	52
9	15	8.790298	11.209702	8.791126	11.208874	10.000828	9.999172	45	51
10	30	8.790808	11.209192	8.791639	11.208361	10.000830	9.999170	30	50
11	45	8.791318	11.208682	8.792151	11.207849	10.000832	9.999168	15	49
12	33	8.791828	11.208172	8.792662	11.207338	10.000834	9.999166	27	48
13	15	8.792337	11.207663	8.793173	11.206827	10.000836	9.999164	45	47
14	30	8.792845	11.207155	8.793683	11.206317	10.000838	9.999162	30	46
15	45	8.793352	11.206648	8.794192	11.205808	10.000840	9.999160	15	45
16	34	8.793859	11.206141	8.794701	11.205299	10.000842	9.999158	26	44
17	15	8.794366	11.205634	8.795210	11.204790	10.000844	9.999156	45	43
18	30	8.794872	11.205128	8.795717	11.204283	10.000846	9.999154	30	42
19	45	8.795377	11.204623	8.796225	11.203775	10.000848	9.999152	15	41
20	35	8.795881	11.204119	8.796731	11.203269	10.000850	9.999150	25	40
21	15	8.796385	11.203615	8.797237	11.202763	10.000852	9.999148	45	39
22	30	8.796889	11.203111	8.797743	11.202257	10.000854	9.999146	30	38
23	45	8.797392	11.202608	8.798248	11.201752	10.000856	9.999144	15	37
24	36	8.797894	11.202106	8.798752	11.201248	10.000858	9.999142	24	36
25	15	8.798396	11.201604	8.799256	11.200744	10.000860	9.999140	45	35
26	30	8.798897	11.201103	8.799759	11.200241	10.000862	9.999138	30	34
27	45	8.799397	11.200603	8.800261	11.199739	10.000864	9.999136	15	33
28	37	8.799897	11.200103	8.800763	11.199237	10.000866	9.999134	23	32
29	15	8.800397	11.199603	8.801265	11.198735	10.000868	9.999132	45	31
30	30	8.800896	11.199104	8.801765	11.198235	10.000870	9.999130	30	30
31	45	8.801394	11.198606	8.802266	11.197734	10.000872	9.999128	15	29
32	38	8.801891	11.198109	8.802765	11.197235	10.000874	9.999126	22	28
33	15	8.802389	11.197611	8.803264	11.196736	10.000876	9.999124	45	27
34	30	8.802885	11.197115	8.803763	11.196237	10.000878	9.999122	30	26
35	45	8.803381	11.196619	8.804261	11.195739	10.000880	9.999120	15	25
36	39	8.803876	11.196124	8.804758	11.195242	10.000882	9.999118	21	24
37	15	8.804371	11.195629	8.805255	11.194745	10.000884	9.999116	45	23
38	30	8.804865	11.195135	8.805751	11.194249	10.000886	9.999114	30	22
39	45	8.805359	11.194641	8.806247	11.193753	10.000888	9.999112	15	21
40	40	8.805852	11.194148	8.806742	11.193258	10.000890	9.999110	20	20
41	15	8.806345	11.193655	8.807237	11.192763	10.000892	9.999108	45	19
42	30	8.806837	11.193163	8.807731	11.192269	10.000894	9.999106	30	18
43	45	8.807328	11.192672	8.808224	11.191776	10.000896	9.999104	15	17
44	41	8.807819	11.192181	8.808717	11.191283	10.000898	9.999102	19	16
45	15	8.808309	11.191691	8.809210	11.190790	10.000900	9.999100	45	15
46	30	8.808799	11.191201	8.809701	11.190299	10.000902	9.999098	30	14
47	45	8.809288	11.190712	8.810193	11.189807	10.000904	9.999096	15	13
48	42	8.809777	11.190223	8.810683	11.189317	10.000906	9.999094	18	12
49	15	8.810265	11.189735	8.811173	11.188827	10.000908	9.999092	45	11
50	30	8.810753	11.189247	8.811663	11.188337	10.000910	9.999090	30	10
51	45	8.811240	11.188760	8.812152	11.187848	10.000912	9.999088	15	9
52	43	8.811726	11.188274	8.812641	11.187359	10.000914	9.999086	17	8
53	15	8.812212	11.187788	8.813129	11.186871	10.000916	9.999084	45	7
54	30	8.812698	11.187302	8.813616	11.186384	10.000919	9.999081	30	6
55	45	8.813182	11.186818	8.814103	11.185897	10.000921	9.999079	15	5
56	44	8.813667	11.186333	8.814589	11.185411	10.000923	9.999077	16	4
57	15	8.814150	11.185850	8.815075	11.184925	10.000925	9.999075	45	3
58	30	8.814634	11.185366	8.815560	11.184440	10.000927	9.999073	30	2
59	45	8.815116	11.184884	8.816045	11.183955	10.000929	9.999071	15	1
60	45	8.815598	11.184402	8.816529	11.183471	10.000931	9.999069	15	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 45'.		LOG. SINES, &c.						86 deg.	

0° 15'.			LOG. SINES, &c. (t)						3 deg.		
sec.	' "	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	' "	sec.	' "	sec.
0	45	8.815598	11.184402	8.816529	11.183471	10.000931	9.999069	15	60		
1	15	8.816080	11.183920	8.817013	11.182987	10.000933	9.999067	45	59		
2	30	8.816561	11.183439	8.817496	11.182504	10.000935	9.999065	30	58		
3	45	8.817042	11.182958	8.817979	11.182021	10.000937	9.999063	15	57		
4	46	8.817522	11.182478	8.818461	11.181539	10.000939	9.999061	14	56		
5	15	8.818001	11.181999	8.818942	11.181058	10.000941	9.999059	45	55		
6	30	8.818480	11.181520	8.819423	11.180577	10.000943	9.999057	30	54		
7	45	8.818958	11.181042	8.819904	11.180096	10.000945	9.999055	15	53		
8	47	8.819436	11.180564	8.820384	11.179616	10.000948	9.999052	13	52		
9	15	8.819914	11.180086	8.820863	11.179137	10.000950	9.999050	45	51		
10	30	8.820390	11.179610	8.821342	11.178658	10.000952	9.999048	30	50		
11	45	8.820867	11.179133	8.821820	11.178180	10.000954	9.999046	15	49		
12	48	8.821342	11.178658	8.822298	11.177702	10.000956	9.999044	12	48		
13	15	8.821818	11.178182	8.822776	11.177224	10.000958	9.999042	45	47		
14	30	8.822292	11.177708	8.823253	11.176747	10.000960	9.999040	30	46		
15	45	8.822767	11.177233	8.823729	11.176271	10.000962	9.999038	15	45		
16	49	8.823240	11.176760	8.824205	11.175795	10.000964	9.999036	11	44		
17	15	8.823713	11.176287	8.824680	11.175320	10.000966	9.999034	45	43		
18	30	8.824186	11.175814	8.825155	11.174845	10.000969	9.999031	30	42		
19	45	8.824658	11.175342	8.825629	11.174371	10.000971	9.999029	15	41		
20	50	8.825130	11.174870	8.826103	11.173897	10.000973	9.999027	10	40		
21	15	8.825601	11.174399	8.826576	11.173424	10.000975	9.999025	45	39		
22	30	8.826072	11.173928	8.827048	11.172952	10.000977	9.999023	30	38		
23	45	8.826542	11.173458	8.827521	11.172479	10.000979	9.999021	15	37		
24	51	8.827011	11.172989	8.827992	11.172008	10.000981	9.999019	9	36		
25	15	8.827480	11.172520	8.828464	11.171536	10.000983	9.999017	45	35		
26	30	8.827949	11.172051	8.828934	11.171066	10.000986	9.999014	30	34		
27	45	8.828417	11.171583	8.829404	11.170596	10.000988	9.999012	15	33		
28	52	8.828884	11.171116	8.829874	11.170126	10.000990	9.999010	8	32		
29	15	8.829351	11.170649	8.830343	11.169657	10.000992	9.999008	45	31		
30	30	8.829818	11.170182	8.830812	11.169188	10.000994	9.999006	30	30		
31	45	8.830284	11.169716	8.831280	11.168720	10.000996	9.999004	15	29		
32	53	8.830749	11.169251	8.831748	11.168252	10.000998	9.999002	7	28		
33	15	8.831214	11.168786	8.832215	11.167785	10.001000	9.999000	45	27		
34	30	8.831679	11.168321	8.832682	11.167318	10.001003	9.998997	30	26		
35	45	8.832143	11.167857	8.833148	11.166852	10.001005	9.998995	15	25		
36	54	8.832607	11.167393	8.833613	11.166387	10.001007	9.998993	6	24		
37	15	8.833070	11.166930	8.834079	11.165921	10.001009	9.998991	45	23		
38	30	8.833532	11.166468	8.834543	11.165457	10.001011	9.998989	30	22		
39	45	8.833994	11.166006	8.835007	11.164993	10.001013	9.998987	15	21		
40	55	8.834456	11.165544	8.835471	11.164529	10.001016	9.998984	5	20		
41	15	8.834917	11.165083	8.835934	11.164066	10.001018	9.998982	45	19		
42	30	8.835377	11.164623	8.836397	11.163603	10.001020	9.998980	30	18		
43	45	8.835837	11.164163	8.836859	11.163141	10.001022	9.998978	15	17		
44	56	8.836297	11.163703	8.837321	11.162679	10.001024	9.998976	4	16		
45	15	8.836756	11.163244	8.837782	11.162218	10.001026	9.998974	45	15		
46	30	8.837215	11.162785	8.838243	11.161757	10.001029	9.998971	30	14		
47	45	8.837673	11.162327	8.838703	11.161297	10.001031	9.998969	15	13		
48	57	8.838130	11.161870	8.839163	11.160837	10.001033	9.998967	3	12		
49	15	8.838588	11.161413	8.839623	11.160377	10.001035	9.998965	45	11		
50	30	8.839047	11.160956	8.840081	11.159919	10.001037	9.998963	30	10		
51	45	8.839500	11.160500	8.840540	11.159460	10.001039	9.998961	15	9		
52	58	8.839956	11.160044	8.840998	11.159002	10.001042	9.998958	2	8		
53	15	8.840411	11.159589	8.841455	11.158545	10.001044	9.998956	45	7		
54	30	8.840866	11.159134	8.841912	11.158088	10.001046	9.998954	30	6		
55	45	8.841320	11.158680	8.842368	11.157632	10.001048	9.998952	15	5		
56	59	8.841774	11.158226	8.842824	11.157176	10.001050	9.998950	1	4		
57	15	8.842227	11.157773	8.843280	11.156720	10.001053	9.998947	45	3		
58	30	8.842680	11.157320	8.843735	11.156265	10.001055	9.998945	30	2		
59	45	8.843133	11.156867	8.844190	11.155810	10.001057	9.998943	15	1		
60	60	8.843584	11.156416	8.844644	11.155356	10.001059	9.998941	0	0		
sec.	' "	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	' "	sec.	' "	sec.
5° 44'.			LOG. SINES, &c.						86 deg.		

0° 16'.		LOG. SINES, &c. (t.)						4 deg.	
sec.	" "	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	" "	sec.
0	0	8.843584	11.156416	8.844644	11.155356	10.001059	9.998941	60	60
1	15	8.844036	11.155964	8.845097	11.154903	10.001061	9.998939	45	59
2	30	8.844487	11.155513	8.845550	11.154450	10.001064	9.998936	30	58
3	45	8.844937	11.155063	8.846003	11.153997	10.001066	9.998934	15	57
4	1	8.845387	11.154613	8.846455	11.153545	10.001068	9.998932	59	56
5	15	8.845837	11.154163	8.846907	11.153093	10.001070	9.998930	45	55
6	30	8.846286	11.153714	8.847358	11.152642	10.001073	9.998927	30	54
7	45	8.846735	11.153265	8.847809	11.152191	10.001075	9.998925	15	53
8	2	8.847183	11.152817	8.848260	11.151740	10.001077	9.998923	58	52
9	15	8.847630	11.152370	8.848710	11.151290	10.001079	9.998921	45	51
10	30	8.848078	11.151922	8.849159	11.150841	10.001081	9.998919	30	50
11	45	8.848524	11.151476	8.849608	11.150392	10.001084	9.998916	15	49
12	3	8.848971	11.151029	8.850057	11.149943	10.001086	9.998914	57	48
13	15	8.849416	11.150584	8.850505	11.149495	10.001088	9.998912	45	47
14	30	8.849862	11.150138	8.850952	11.149048	10.001090	9.998910	30	46
15	45	8.850307	11.149693	8.851399	11.148601	10.001093	9.998907	15	45
16	4	8.850751	11.149249	8.851846	11.148154	10.001095	9.998905	56	44
17	15	8.851195	11.148805	8.852292	11.147708	10.001097	9.998903	45	43
18	30	8.851639	11.148361	8.852738	11.147262	10.001099	9.998901	30	42
19	45	8.852082	11.147918	8.853183	11.146817	10.001102	9.998898	15	41
20	5	8.852524	11.147476	8.853628	11.146372	10.001104	9.998896	55	40
21	15	8.852967	11.147033	8.854073	11.145927	10.001106	9.998894	45	39
22	30	8.853408	11.146592	8.854517	11.145483	10.001108	9.998892	30	38
23	45	8.853850	11.146150	8.854960	11.145040	10.001111	9.998889	15	37
24	6	8.854290	11.145710	8.855403	11.144597	10.001113	9.998887	54	36
25	15	8.854731	11.145269	8.855846	11.144154	10.001115	9.998885	45	35
26	30	8.855171	11.144829	8.856288	11.143712	10.001117	9.998883	30	34
27	45	8.855610	11.144390	8.856730	11.143270	10.001120	9.998880	15	33
28	7	8.856049	11.143951	8.857171	11.142829	10.001122	9.998878	53	32
29	15	8.856488	11.143512	8.857612	11.142388	10.001124	9.998876	45	31
30	30	8.856926	11.143074	8.858053	11.141947	10.001127	9.998873	30	30
31	45	8.857364	11.142636	8.858493	11.141507	10.001129	9.998871	15	29
32	8	8.857801	11.142199	8.858932	11.141068	10.001131	9.998869	52	28
33	15	8.858238	11.141762	8.859371	11.140629	10.001133	9.998867	45	27
34	30	8.858674	11.141326	8.859810	11.140190	10.001136	9.998864	30	26
35	45	8.859110	11.140890	8.860248	11.139752	10.001138	9.998862	15	25
36	9	8.859546	11.140454	8.860686	11.139314	10.001140	9.998860	51	24
37	15	8.859981	11.140019	8.861123	11.138877	10.001143	9.998857	45	23
38	30	8.860415	11.139585	8.861560	11.138440	10.001145	9.998855	30	22
39	45	8.860849	11.139151	8.861997	11.138003	10.001147	9.998853	15	21
40	10	8.861283	11.138717	8.862433	11.137567	10.001149	9.998851	50	20
41	15	8.861717	11.138283	8.862868	11.137132	10.001152	9.998848	45	19
42	30	8.862149	11.137851	8.863303	11.136697	10.001154	9.998846	30	18
43	45	8.862582	11.137418	8.863738	11.136262	10.001156	9.998844	15	17
44	11	8.863014	11.136986	8.864172	11.135828	10.001159	9.998841	49	16
45	15	8.863445	11.136555	8.864606	11.135394	10.001161	9.998839	45	15
46	30	8.863877	11.136123	8.865040	11.134960	10.001163	9.998837	30	14
47	45	8.864307	11.135693	8.865473	11.134527	10.001166	9.998834	15	13
48	12	8.864738	11.135262	8.865905	11.134095	10.001168	9.998832	48	12
49	15	8.865167	11.134833	8.866338	11.133662	10.001170	9.998830	45	11
50	30	8.865597	11.134403	8.866769	11.133231	10.001173	9.998827	30	10
51	45	8.866026	11.133974	8.867201	11.132799	10.001175	9.998825	15	9
52	13	8.866454	11.133546	8.867632	11.132368	10.001177	9.998823	47	8
53	15	8.866883	11.133117	8.868062	11.131938	10.001180	9.998820	45	7
54	30	8.867310	11.132690	8.868492	11.131508	10.001182	9.998818	30	6
55	45	8.867738	11.132262	8.868922	11.131078	10.001184	9.998816	15	5
56	14	8.868165	11.131835	8.869351	11.130649	10.001187	9.998813	46	4
57	15	8.868591	11.131409	8.869780	11.130220	10.001189	9.998811	45	3
58	30	8.869017	11.130983	8.870208	11.129792	10.001191	9.998809	30	2
59	45	8.869443	11.130557	8.870636	11.129364	10.001194	9.998806	15	1
60	15	8.869868	11.130132	8.871064	11.128936	10.001196	9.998804	45	0
sec.	" "	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	" "	sec.
5° 43'.		LOG. SINES, &c.						85 deg.	

0 ^h 17 ^m .		LOG. SINES, &c. (t.)						4 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	8.869868	11.130132	8.871064	11.128936	10.001196	9.998804	45	60
1	15	8.870293	11.129707	8.871491	11.128509	10.001198	9.998802	45	59
2	30	8.870717	11.129283	8.871918	11.128082	10.001201	9.998799	30	58
3	45	8.871141	11.128859	8.872344	11.127656	10.001203	9.998797	15	57
4	16	8.871565	11.128435	8.872770	11.127230	10.001205	9.998795	44	56
5	15	8.871988	11.128012	8.873195	11.126805	10.001208	9.998792	45	55
6	30	8.872410	11.127590	8.873620	11.126380	10.001210	9.998790	30	54
7	45	8.872833	11.127167	8.874045	11.125955	10.001212	9.998788	15	53
8	17	8.873255	11.126745	8.874469	11.125531	10.001215	9.998785	43	52
9	15	8.873676	11.126324	8.874893	11.125107	10.001217	9.998783	45	51
10	30	8.874097	11.125903	8.875317	11.124683	10.001220	9.998780	30	50
11	45	8.874518	11.125482	8.875740	11.124260	10.001222	9.998778	15	49
12	18	8.874938	11.125062	8.876162	11.123838	10.001224	9.998776	42	48
13	15	8.875358	11.124642	8.876584	11.123416	10.001227	9.998773	45	47
14	30	8.875777	11.124223	8.877006	11.122994	10.001229	9.998771	30	46
15	45	8.876196	11.123804	8.877428	11.122572	10.001231	9.998769	15	45
16	19	8.876615	11.123385	8.877849	11.122151	10.001234	9.998766	41	44
17	15	8.877033	11.122967	8.878269	11.121731	10.001236	9.998764	45	43
18	30	8.877451	11.122549	8.878689	11.121311	10.001239	9.998761	30	42
19	45	8.877868	11.122132	8.879109	11.120891	10.001241	9.998759	15	41
20	20	8.878285	11.121715	8.879529	11.120471	10.001243	9.998757	40	40
21	15	8.878702	11.121298	8.879948	11.120052	10.001246	9.998754	45	39
22	30	8.879118	11.120882	8.880366	11.119634	10.001248	9.998752	30	38
23	45	8.879534	11.120466	8.880784	11.119216	10.001251	9.998749	15	37
24	21	8.879949	11.120051	8.881202	11.118798	10.001253	9.998747	39	36
25	15	8.880364	11.119636	8.881620	11.118380	10.001255	9.998745	45	35
26	30	8.880779	11.119221	8.882037	11.117963	10.001258	9.998742	30	34
27	45	8.881193	11.118807	8.882453	11.117547	10.001260	9.998740	15	33
28	22	8.881607	11.118393	8.882869	11.117131	10.001263	9.998737	38	32
29	15	8.882020	11.117980	8.883285	11.116715	10.001265	9.998735	45	31
30	30	8.882433	11.117567	8.883701	11.116299	10.001267	9.998733	30	30
31	45	8.882846	11.117154	8.884116	11.115884	10.001270	9.998730	15	29
32	23	8.883258	11.116742	8.884530	11.115470	10.001272	9.998728	37	28
33	15	8.883670	11.116330	8.884945	11.115055	10.001275	9.998725	45	27
34	30	8.884081	11.115919	8.885358	11.114642	10.001277	9.998723	30	26
35	45	8.884492	11.115508	8.885772	11.114228	10.001279	9.998721	15	25
36	24	8.884903	11.115097	8.886185	11.113815	10.001282	9.998718	36	24
37	15	8.885313	11.114687	8.886598	11.113402	10.001284	9.998716	45	23
38	30	8.885723	11.114277	8.887010	11.112990	10.001287	9.998713	30	22
39	45	8.886133	11.113867	8.887422	11.112578	10.001289	9.998711	15	21
40	25	8.886542	11.113458	8.887833	11.112167	10.001292	9.998708	35	20
41	15	8.886950	11.113050	8.888244	11.111756	10.001294	9.998706	45	19
42	30	8.887359	11.112641	8.888655	11.111345	10.001297	9.998703	30	18
43	45	8.887767	11.112233	8.889066	11.110934	10.001299	9.998701	15	17
44	26	8.888174	11.111826	8.889476	11.110524	10.001301	9.998699	34	16
45	15	8.888581	11.111419	8.889885	11.110115	10.001304	9.998696	45	15
46	30	8.888988	11.111012	8.890294	11.109706	10.001306	9.998694	30	14
47	45	8.889395	11.110605	8.890703	11.109297	10.001309	9.998691	15	13
48	27	8.889801	11.110199	8.891112	11.108888	10.001311	9.998689	33	12
49	15	8.890206	11.109794	8.891520	11.108480	10.001314	9.998686	45	11
50	30	8.890612	11.109388	8.891928	11.108072	10.001316	9.998684	30	10
51	45	8.891016	11.108984	8.892335	11.107665	10.001319	9.998681	15	9
52	28	8.891421	11.108579	8.892742	11.107258	10.001321	9.998679	32	8
53	15	8.891825	11.108175	8.893148	11.106852	10.001324	9.998676	45	7
54	30	8.892229	11.107771	8.893555	11.106445	10.001326	9.998674	30	6
55	45	8.892632	11.107368	8.893961	11.106039	10.001329	9.998671	15	5
56	29	8.893035	11.106965	8.894366	11.105634	10.001331	9.998669	31	4
57	15	8.893438	11.106562	8.894771	11.105229	10.001333	9.998667	45	3
58	30	8.893840	11.106160	8.895176	11.104824	10.001336	9.998664	30	2
59	45	8.894242	11.105758	8.895580	11.104420	10.001338	9.998662	15	1
60	30	8.894643	11.105357	8.895984	11.104016	10.001341	9.998659	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5 ^h 42 ^m .		LOG. SINES, &c.						85 deg.	

0° 18'		LOG. SINES, &c. (L.)						4 deg.	
		sine.	cosecant.	tangent.	cotangent.	secant.	cosine.		sec.
30		8.894643	11.105357	8.895984	11.104016	10.001341	9.998659	30	60
15		8.895044	11.104956	8.896388	11.103612	10.001343	9.998657	45	59
30		8.895445	11.104555	8.896791	11.103209	10.001346	9.998654	30	58
45		8.895845	11.104155	8.897194	11.102806	10.001348	9.998652	15	57
31		8.896245	11.103755	8.897596	11.102404	10.001351	9.998649	29	56
15		8.896645	11.103355	8.897998	11.102002	10.001353	9.998647	45	55
30		8.897044	11.102956	8.898400	11.101600	10.001356	9.998644	30	54
45		8.897443	11.102557	8.898802	11.101198	10.001358	9.998642	15	53
32		8.897842	11.102158	8.899203	11.100797	10.001361	9.998639	28	52
15		8.898240	11.101760	8.899603	11.100397	10.001363	9.998637	45	51
30		8.898638	11.101362	8.900004	11.099996	10.001366	9.998634	30	50
45		8.899035	11.100965	8.900403	11.099597	10.001368	9.998632	15	49
33		8.899432	11.100568	8.900803	11.099197	10.001371	9.998629	27	48
15		8.899829	11.100171	8.901202	11.098798	10.001373	9.998627	45	47
30		8.900225	11.099775	8.901601	11.098399	10.001376	9.998624	30	46
45		8.900621	11.099379	8.902000	11.098000	10.001378	9.998622	15	45
34		8.901017	11.098983	8.902398	11.097602	10.001381	9.998619	26	44
15		8.901412	11.098588	8.902795	11.097205	10.001383	9.998617	45	43
30		8.901807	11.098193	8.903193	11.096807	10.001386	9.998614	30	42
45		8.902201	11.097799	8.903590	11.096410	10.001389	9.998611	15	41
35		8.902595	11.097405	8.903987	11.096013	10.001391	9.998609	25	40
15		8.902989	11.097011	8.904383	11.095617	10.001394	9.998606	45	39
30		8.903383	11.096617	8.904779	11.095221	10.001396	9.998604	30	38
45		8.903776	11.096224	8.905174	11.094826	10.001399	9.998601	15	37
36		8.904168	11.095832	8.905570	11.094430	10.001401	9.998599	24	36
15		8.904561	11.095439	8.905965	11.094035	10.001404	9.998596	45	35
30		8.904953	11.095047	8.906359	11.093641	10.001406	9.998594	30	34
45		8.905345	11.094655	8.906753	11.093247	10.001409	9.998591	15	33
37		8.905736	11.094264	8.907147	11.092853	10.001411	9.998589	23	32
15		8.906127	11.093873	8.907541	11.092459	10.001414	9.998586	45	31
30		8.906517	11.093483	8.907934	11.092066	10.001417	9.998583	30	30
45		8.906908	11.093092	8.908327	11.091673	10.001419	9.998581	15	29
38		8.907297	11.092703	8.908719	11.091281	10.001422	9.998578	22	28
15		8.907687	11.092313	8.909111	11.090889	10.001424	9.998576	45	27
30		8.908076	11.091924	8.909503	11.090497	10.001427	9.998573	30	26
45		8.908465	11.091535	8.909894	11.090106	10.001429	9.998571	15	25
39		8.908853	11.091147	8.910285	11.089715	10.001432	9.998568	21	24
15		8.909242	11.090758	8.910676	11.089324	10.001434	9.998566	45	23
30		8.909629	11.090371	8.911066	11.088934	10.001437	9.998563	30	22
45		8.910017	11.089983	8.911456	11.088544	10.001440	9.998560	15	21
40		8.910404	11.089596	8.911846	11.088154	10.001442	9.998558	20	20
15		8.910791	11.089209	8.912235	11.087765	10.001445	9.998555	45	19
30		8.911177	11.088823	8.912624	11.087376	10.001447	9.998553	30	18
45		8.911563	11.088437	8.913013	11.086987	10.001450	9.998550	15	17
41		8.911949	11.088051	8.913401	11.086599	10.001453	9.998547	19	16
15		8.912334	11.087666	8.913789	11.086211	10.001455	9.998545	45	15
30		8.912719	11.087281	8.914177	11.085823	10.001458	9.998542	30	14
45		8.913104	11.086896	8.914564	11.085436	10.001460	9.998540	15	13
42		8.913488	11.086512	8.914951	11.085049	10.001463	9.998537	18	12
15		8.913872	11.086128	8.915337	11.084663	10.001465	9.998535	45	11
30		8.914256	11.085744	8.915724	11.084276	10.001468	9.998532	30	10
45		8.914639	11.085361	8.916110	11.083890	10.001471	9.998529	15	9
43		8.915022	11.084978	8.916495	11.083505	10.001473	9.998527	17	8
15		8.915404	11.084596	8.916880	11.083120	10.001476	9.998524	45	7
30		8.915787	11.084213	8.917265	11.082735	10.001478	9.998522	30	6
45		8.916169	11.083831	8.917650	11.082350	10.001481	9.998519	15	5
44		8.916550	11.083450	8.918034	11.081966	10.001484	9.998516	16	4
15		8.916932	11.083068	8.918418	11.081582	10.001486	9.998514	45	3
30		8.917312	11.082688	8.918801	11.081199	10.001489	9.998511	30	2
45		8.917693	11.082307	8.919185	11.080815	10.001492	9.998508	15	1
45		8.918073	11.081927	8.919567	11.080433	10.001494	9.998506	15	0
		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
5° 41'		LOG. SINES, &c.						85 deg.	

0° 19'.		LOG. SINES, &c. (L.)						4 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	8.918073	11.081927	8.919567	11.080433	10.001494	9.998506	15	60
1	15	8.918453	11.081547	8.919950	11.080050	10.001497	9.998503	45	59
2	30	8.918833	11.081167	8.920332	11.079668	10.001499	9.998501	30	58
3	45	8.919212	11.080788	8.920714	11.079286	10.001502	9.998498	15	57
4	46	8.919591	11.080409	8.921096	11.078904	10.001505	9.998495	14	56
5	15	8.919970	11.080030	8.921477	11.078523	10.001507	9.998493	45	55
6	30	8.920348	11.079652	8.921858	11.078142	10.001510	9.998490	30	54
7	45	8.920726	11.079274	8.922238	11.077762	10.001513	9.998487	15	53
8	47	8.921103	11.078897	8.922619	11.077381	10.001515	9.998485	13	52
9	15	8.921481	11.078519	8.922998	11.077002	10.001518	9.998482	45	51
10	30	8.921858	11.078142	8.923378	11.076622	10.001521	9.998479	30	50
11	45	8.922234	11.077766	8.923757	11.076243	10.001523	9.998477	15	49
12	48	8.922610	11.077390	8.924136	11.075864	10.001526	9.998474	12	48
13	15	8.922986	11.077014	8.924515	11.075485	10.001529	9.998471	45	47
14	30	8.923362	11.076638	8.924893	11.075107	10.001531	9.998469	30	46
15	45	8.923737	11.076263	8.925271	11.074729	10.001534	9.998466	15	45
16	49	8.924112	11.075888	8.925649	11.074351	10.001536	9.998464	11	44
17	15	8.924487	11.075513	8.926026	11.073974	10.001539	9.998461	45	43
18	30	8.924861	11.075139	8.926403	11.073597	10.001542	9.998458	30	42
19	45	8.925235	11.074765	8.926780	11.073220	10.001544	9.998456	15	41
20	50	8.925609	11.074391	8.927156	11.072844	10.001547	9.998453	10	40
21	15	8.925982	11.074018	8.927532	11.072468	10.001550	9.998450	45	39
22	30	8.926355	11.073645	8.927908	11.072092	10.001552	9.998448	30	38
23	45	8.926728	11.073272	8.928283	11.071717	10.001555	9.998445	15	37
24	51	8.927100	11.072900	8.928658	11.071342	10.001558	9.998442	9	36
25	15	8.927472	11.072528	8.929033	11.070967	10.001561	9.998439	45	35
26	30	8.927844	11.072156	8.929407	11.070593	10.001563	9.998437	30	34
27	45	8.928215	11.071785	8.929781	11.070219	10.001566	9.998434	15	33
28	52	8.928587	11.071413	8.930155	11.069845	10.001569	9.998431	8	32
29	15	8.928957	11.071043	8.930529	11.069471	10.001571	9.998429	45	31
30	30	8.929328	11.070672	8.930902	11.069098	10.001574	9.998426	30	30
31	45	8.929698	11.070302	8.931275	11.068725	10.001577	9.998423	15	29
32	53	8.930068	11.069932	8.931647	11.068353	10.001579	9.998421	7	28
33	15	8.930437	11.069563	8.932019	11.067981	10.001582	9.998418	45	27
34	30	8.930806	11.069194	8.932391	11.067609	10.001585	9.998415	30	26
35	45	8.931175	11.068825	8.932763	11.067237	10.001587	9.998413	15	25
36	54	8.931544	11.068456	8.933134	11.066866	10.001590	9.998410	6	24
37	15	8.931912	11.068088	8.933505	11.066495	10.001593	9.998407	45	23
38	30	8.932280	11.067720	8.933876	11.066124	10.001596	9.998404	30	22
39	45	8.932648	11.067352	8.934246	11.065754	10.001598	9.998402	15	21
40	55	8.933015	11.066985	8.934616	11.065384	10.001601	9.998399	5	20
41	15	8.933382	11.066618	8.934986	11.065014	10.001604	9.998396	45	19
42	30	8.933749	11.066251	8.935355	11.064645	10.001606	9.998394	30	18
43	45	8.934115	11.065885	8.935724	11.064276	10.001609	9.998391	15	17
44	56	8.934481	11.065519	8.936093	11.063907	10.001612	9.998388	4	16
45	15	8.934847	11.065153	8.936461	11.063539	10.001615	9.998385	45	15
46	30	8.935212	11.064788	8.936830	11.063170	10.001617	9.998383	30	14
47	45	8.935577	11.064423	8.937197	11.062803	10.001620	9.998380	15	13
48	57	8.935942	11.064058	8.937565	11.062435	10.001623	9.998377	3	12
49	15	8.936307	11.063693	8.937932	11.062068	10.001626	9.998374	45	11
50	30	8.936671	11.063329	8.938299	11.061701	10.001628	9.998372	30	10
51	45	8.937035	11.062965	8.938666	11.061334	10.001631	9.998369	15	9
52	58	8.937398	11.062602	8.939032	11.060968	10.001634	9.998366	2	8
53	15	8.937762	11.062238	8.939398	11.060602	10.001637	9.998363	45	7
54	30	8.938125	11.061875	8.939764	11.060236	10.001639	9.998361	30	6
55	45	8.938487	11.061513	8.940129	11.059871	10.001642	9.998358	15	5
56	59	8.938850	11.061150	8.940494	11.059506	10.001645	9.998355	1	4
57	15	8.939212	11.060788	8.940859	11.059141	10.001648	9.998352	45	3
58	30	8.939573	11.060427	8.941224	11.058776	10.001650	9.998350	30	2
59	45	8.939935	11.060065	8.941588	11.058412	10.001653	9.998347	15	1
60	60	8.940296	11.059704	8.941952	11.058048	10.001656	9.998344	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 40'.		LOG. SINES, &c.						85 deg.	

0 ^h 20 ^m .		LOG. SINES, &c. (L.)						5 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	8.940296	11.059704	8.941952	11.058048	10.001656	9.998344	60	60
1	15	8.940657	11.059343	8.942315	11.057685	10.001659	9.998341	45	59
2	30	8.941017	11.058983	8.942679	11.057321	10.001661	9.998339	30	58
3	45	8.941378	11.058622	8.943042	11.056958	10.001664	9.998336	15	57
4	1	8.941738	11.058262	8.943404	11.056596	10.001667	9.998333	59	56
5	15	8.942097	11.057903	8.943767	11.056233	10.001670	9.998330	45	55
6	30	8.942456	11.057544	8.944129	11.055871	10.001672	9.998328	30	54
7	45	8.942816	11.057184	8.944491	11.055509	10.001675	9.998325	15	53
8	2	8.943174	11.056826	8.944852	11.055148	10.001678	9.998322	58	52
9	15	8.943533	11.056467	8.945213	11.054787	10.001681	9.998319	45	51
10	30	8.943891	11.056109	8.945574	11.054426	10.001684	9.998316	30	50
11	45	8.944249	11.055751	8.945935	11.054065	10.001686	9.998314	15	49
12	3	8.944606	11.055394	8.946295	11.053705	10.001689	9.998311	57	48
13	15	8.944963	11.055037	8.946655	11.053345	10.001692	9.998308	45	47
14	30	8.945320	11.054680	8.947015	11.052985	10.001695	9.998305	30	46
15	45	8.945677	11.054323	8.947375	11.052625	10.001698	9.998302	15	45
16	4	8.946033	11.053967	8.947734	11.052266	10.001700	9.998300	56	44
17	15	8.946390	11.053610	8.948093	11.051907	10.001703	9.998297	45	43
18	30	8.946745	11.053255	8.948451	11.051549	10.001706	9.998294	30	42
19	45	8.947101	11.052899	8.948810	11.051190	10.001709	9.998291	15	41
20	5	8.947456	11.052544	8.949168	11.050832	10.001712	9.998288	55	40
21	15	8.947811	11.052189	8.949525	11.050475	10.001714	9.998286	45	39
22	30	8.948166	11.051834	8.949883	11.050117	10.001717	9.998283	30	38
23	45	8.948520	11.051480	8.950240	11.049760	10.001720	9.998280	15	37
24	6	8.948874	11.051126	8.950597	11.049403	10.001723	9.998277	54	36
25	15	8.949228	11.050772	8.950953	11.049047	10.001726	9.998274	45	35
26	30	8.949581	11.050419	8.951309	11.048691	10.001728	9.998272	30	34
27	45	8.949934	11.050066	8.951665	11.048335	10.001731	9.998269	15	33
28	7	8.950287	11.049713	8.952021	11.047979	10.001734	9.998266	53	32
29	15	8.950640	11.049360	8.952376	11.047624	10.001737	9.998263	45	31
30	30	8.950992	11.049008	8.952732	11.047268	10.001740	9.998260	30	30
31	45	8.951344	11.048656	8.953086	11.046914	10.001743	9.998257	15	29
32	8	8.951696	11.048304	8.953441	11.046559	10.001745	9.998255	52	28
33	15	8.952047	11.047953	8.953795	11.046205	10.001748	9.998252	45	27
34	30	8.952398	11.047602	8.954149	11.045851	10.001751	9.998249	30	26
35	45	8.952749	11.047251	8.954503	11.045497	10.001754	9.998246	15	25
36	9	8.953100	11.046900	8.954856	11.045144	10.001757	9.998243	51	24
37	15	8.953450	11.046550	8.955209	11.044791	10.001760	9.998240	45	23
38	30	8.953800	11.046200	8.955562	11.044438	10.001762	9.998238	30	22
39	45	8.954150	11.045850	8.955915	11.044085	10.001765	9.998235	15	21
40	10	8.954499	11.045501	8.956267	11.043733	10.001768	9.998232	50	20
41	15	8.954848	11.045152	8.956619	11.043381	10.001771	9.998229	45	19
42	30	8.955197	11.044803	8.956971	11.043029	10.001774	9.998226	30	18
43	45	8.955546	11.044454	8.957322	11.042678	10.001777	9.998223	15	17
44	11	8.955894	11.044106	8.957673	11.042327	10.001780	9.998220	49	16
45	15	8.956242	11.043758	8.958024	11.041976	10.001783	9.998217	45	15
46	30	8.956590	11.043410	8.958375	11.041625	10.001785	9.998215	30	14
47	45	8.956937	11.043063	8.958725	11.041275	10.001788	9.998212	15	13
48	12	8.957284	11.042716	8.959075	11.040925	10.001791	9.998209	48	12
49	15	8.957631	11.042369	8.959425	11.040575	10.001794	9.998206	45	11
50	30	8.957978	11.042022	8.959775	11.040225	10.001797	9.998203	30	10
51	45	8.958324	11.041676	8.960124	11.039876	10.001800	9.998200	15	9
52	13	8.958670	11.041330	8.960473	11.039527	10.001803	9.998197	47	8
53	15	8.959016	11.040984	8.960821	11.039179	10.001806	9.998194	45	7
54	30	8.959361	11.040639	8.961170	11.038830	10.001808	9.998192	30	6
55	45	8.959707	11.040293	8.961518	11.038482	10.001811	9.998189	15	5
56	14	8.960052	11.039948	8.961866	11.038134	10.001814	9.998186	46	4
57	15	8.960396	11.039604	8.962213	11.037787	10.001817	9.998183	45	3
58	30	8.960741	11.039259	8.962561	11.037439	10.001820	9.998180	30	2
59	45	8.961085	11.038915	8.962908	11.037092	10.001823	9.998177	15	1
60	15	8.961429	11.038571	8.963254	11.036746	10.001826	9.998174	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5 ^h 39 ^m .		LOG. SINES, &c.						84 deg.	

0° 21".			LOG. SINES, &c. (t)						5 deg.		
sec.	"	'	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	'	sec.
0	15		8.961429	11.038571	8.963254	11.036746	10.001826	9.998174	45		60
1		15	8.961772	11.038228	8.963601	11.036399	10.001829	9.998171	45		59
2		30	8.962116	11.037884	8.963947	11.036053	10.001832	9.998168	30		58
3		45	8.962459	11.037541	8.964293	11.035707	10.001834	9.998166	15		57
4	16		8.962801	11.037199	8.964639	11.035361	10.001837	9.998163	44		56
5		15	8.963144	11.036856	8.964984	11.035016	10.001840	9.998160	45		55
6		30	8.963486	11.036514	8.965329	11.034671	10.001843	9.998157	30		54
7		45	8.963828	11.036172	8.965674	11.034326	10.001846	9.998154	15		53
8	17		8.964170	11.035830	8.966019	11.033981	10.001849	9.998151	43		52
9		15	8.964511	11.035489	8.966363	11.033637	10.001852	9.998148	45		51
10		30	8.964852	11.035148	8.966707	11.033293	10.001855	9.998145	30		50
11		45	8.965193	11.034807	8.967051	11.032949	10.001858	9.998142	15		49
12	18		8.965534	11.034466	8.967394	11.032606	10.001861	9.998139	42		48
13		15	8.965874	11.034126	8.967738	11.032262	10.001864	9.998136	45		47
14		30	8.966214	11.033786	8.968081	11.031919	10.001867	9.998133	30		46
15		45	8.966554	11.033446	8.968423	11.031577	10.001870	9.998130	15		45
16	19		8.966893	11.033107	8.968766	11.031234	10.001873	9.998127	41		44
17		15	8.967233	11.032767	8.969108	11.030892	10.001875	9.998125	45		43
18		30	8.967572	11.032428	8.969450	11.030550	10.001878	9.998122	30		42
19		45	8.967910	11.032090	8.969792	11.030208	10.001881	9.998119	15		41
20	20		8.968249	11.031751	8.970133	11.029867	10.001884	9.998116	40		40
21		15	8.968587	11.031413	8.970474	11.029526	10.001887	9.998113	45		39
22		30	8.968925	11.031075	8.970815	11.029185	10.001890	9.998110	30		38
23		45	8.969262	11.030738	8.971156	11.028844	10.001893	9.998107	15		37
24	21		8.969600	11.030400	8.971496	11.028504	10.001896	9.998104	39		36
25		15	8.969937	11.030063	8.971836	11.028164	10.001899	9.998101	45		35
26		30	8.970274	11.029726	8.972176	11.027824	10.001902	9.998098	30		34
27		45	8.970610	11.029390	8.972515	11.027485	10.001905	9.998095	15		33
28	22		8.970947	11.029053	8.972855	11.027145	10.001908	9.998092	38		32
29		15	8.971283	11.028717	8.973194	11.026806	10.001911	9.998089	45		31
30		30	8.971619	11.028381	8.973532	11.026468	10.001914	9.998086	30		30
31		45	8.971954	11.028046	8.973871	11.026129	10.001917	9.998083	15		29
32	23		8.972289	11.027711	8.974209	11.025791	10.001920	9.998080	37		28
33		15	8.972624	11.027376	8.974547	11.025453	10.001923	9.998077	45		27
34		30	8.972959	11.027041	8.974885	11.025115	10.001926	9.998074	30		26
35		45	8.973294	11.026706	8.975222	11.024778	10.001929	9.998071	15		25
36	24		8.973628	11.026372	8.975560	11.024440	10.001932	9.998068	36		24
37		15	8.973962	11.026038	8.975897	11.024103	10.001935	9.998065	45		23
38		30	8.974296	11.025704	8.976233	11.023767	10.001938	9.998062	30		22
39		45	8.974629	11.025371	8.976570	11.023430	10.001941	9.998059	15		21
40	25		8.974962	11.025038	8.976906	11.023094	10.001944	9.998056	35		20
41		15	8.975295	11.024705	8.977242	11.022758	10.001947	9.998053	45		19
42		30	8.975628	11.024372	8.977578	11.022422	10.001950	9.998050	30		18
43		45	8.975960	11.024040	8.977913	11.022087	10.001953	9.998047	15		17
44	26		8.976293	11.023707	8.978248	11.021752	10.001956	9.998044	34		16
45		15	8.976624	11.023376	8.978583	11.021417	10.001959	9.998041	45		15
46		30	8.976956	11.023044	8.978918	11.021082	10.001962	9.998038	30		14
47		45	8.977288	11.022712	8.979252	11.020748	10.001965	9.998035	15		13
48	27		8.977619	11.022381	8.979586	11.020414	10.001968	9.998032	33		12
49		15	8.977950	11.022050	8.979920	11.020080	10.001971	9.998029	45		11
50		30	8.978280	11.021720	8.980254	11.019746	10.001974	9.998026	30		10
51		45	8.978611	11.021389	8.980587	11.019413	10.001977	9.998023	15		9
52	28		8.978941	11.021059	8.980921	11.019079	10.001980	9.998020	32		8
53		15	8.979271	11.020729	8.981253	11.018747	10.001983	9.998017	45		7
54		30	8.979600	11.020400	8.981586	11.018414	10.001986	9.998014	30		6
55		45	8.979930	11.020070	8.981919	11.018081	10.001989	9.998011	15		5
56	29		8.980259	11.019741	8.982251	11.017749	10.001992	9.998008	31		4
57		15	8.980588	11.019412	8.982583	11.017417	10.001995	9.998005	45		3
58		30	8.980916	11.019084	8.982914	11.017086	10.001998	9.998002	30		2
59		45	8.981245	11.018755	8.983246	11.016754	10.002001	9.997999	15		1
60	30		8.981573	11.018427	8.983577	11.016423	10.002004	9.997996	30		0
sec.	"	'	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	'	sec.
5° 38".			LOG. SINES, &c.						84 deg.		

0° 22'.		LOG. SINES, &c. (t.)						5 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	8.981573	11.018427	8.983577	11.016423	10.002004	9.997996	30	60
1	15	8.981901	11.018099	8.983908	11.016092	10.002007	9.997993	45	59
2	30	8.982228	11.017772	8.984238	11.015762	10.002010	9.997990	30	58
3	45	8.982556	11.017444	8.984569	11.015431	10.002013	9.997987	15	57
4	31	8.982883	11.017117	8.984899	11.015101	10.002016	9.997984	29	56
5	15	8.983210	11.016790	8.985229	11.014771	10.002019	9.997981	45	55
6	30	8.983536	11.016464	8.985559	11.014441	10.002022	9.997978	30	54
7	45	8.983863	11.016137	8.985886	11.014112	10.002025	9.997975	15	53
8	32	8.984189	11.015811	8.986217	11.013783	10.002028	9.997972	28	52
9	15	8.984515	11.015485	8.986546	11.013454	10.002032	9.997968	45	51
10	30	8.984840	11.015160	8.986875	11.013125	10.002035	9.997965	30	50
11	45	8.985166	11.014834	8.987203	11.012797	10.002038	9.997962	15	49
12	33	8.985491	11.014509	8.987532	11.012468	10.002041	9.997959	27	48
13	15	8.985816	11.014184	8.987860	11.012140	10.002044	9.997956	45	47
14	30	8.986140	11.013860	8.988187	11.011813	10.002047	9.997953	30	46
15	45	8.986465	11.013535	8.988515	11.011485	10.002050	9.997950	15	45
16	34	8.986789	11.013211	8.988842	11.011158	10.002053	9.997947	26	44
17	15	8.987113	11.012887	8.989169	11.010831	10.002056	9.997944	45	43
18	30	8.987437	11.012563	8.989496	11.010504	10.002059	9.997941	30	42
19	45	8.987760	11.012240	8.989822	11.010178	10.002062	9.997938	15	41
20	35	8.988083	11.011917	8.990149	11.009851	10.002065	9.997935	25	40
21	15	8.988406	11.011594	8.990475	11.009525	10.002068	9.997932	45	39
22	30	8.988729	11.011271	8.990800	11.009200	10.002072	9.997928	30	38
23	45	8.989051	11.010949	8.991126	11.008874	10.002075	9.997925	15	37
24	36	8.989374	11.010626	8.991451	11.008549	10.002078	9.997922	24	36
25	15	8.989696	11.010304	8.991776	11.008224	10.002081	9.997919	45	35
26	30	8.990017	11.009983	8.992101	11.007899	10.002084	9.997916	30	34
27	45	8.990339	11.009661	8.992426	11.007574	10.002087	9.997913	15	33
28	37	8.990660	11.009340	8.992750	11.007250	10.002090	9.997910	23	32
29	15	8.990981	11.009019	8.993074	11.006926	10.002093	9.997907	45	31
30	30	8.991302	11.008698	8.993398	11.006602	10.002096	9.997904	30	30
31	45	8.991623	11.008377	8.993722	11.006278	10.002099	9.997901	15	29
32	38	8.991943	11.008057	8.994045	11.005955	10.002103	9.997897	22	28
33	15	8.992263	11.007737	8.994369	11.005631	10.002106	9.997894	45	27
34	30	8.992583	11.007417	8.994691	11.005309	10.002109	9.997891	30	26
35	45	8.992902	11.007098	8.995014	11.004986	10.002112	9.997888	15	25
36	39	8.993222	11.006778	8.995337	11.004663	10.002115	9.997885	21	24
37	15	8.993541	11.006459	8.995659	11.004341	10.002118	9.997882	45	23
38	30	8.993860	11.006140	8.995981	11.004019	10.002121	9.997879	30	22
39	45	8.994178	11.005822	8.996303	11.003697	10.002124	9.997876	15	21
40	40	8.994497	11.005503	8.996624	11.003376	10.002128	9.997872	20	20
41	15	8.994815	11.005185	8.996946	11.003054	10.002131	9.997869	45	19
42	30	8.995133	11.004867	8.997267	11.002733	10.002134	9.997866	30	18
43	45	8.995451	11.004549	8.997587	11.002413	10.002137	9.997863	15	17
44	41	8.995768	11.004232	8.997908	11.002092	10.002140	9.997860	19	16
45	15	8.996085	11.003915	8.998228	11.001772	10.002143	9.997857	45	15
46	30	8.996402	11.003598	8.998549	11.001451	10.002146	9.997854	30	14
47	45	8.996719	11.003281	8.998869	11.001131	10.002150	9.997850	15	13
48	42	8.997036	11.002964	8.999188	11.000812	10.002153	9.997847	18	12
49	15	8.997352	11.002648	8.999508	11.000492	10.002156	9.997844	45	11
50	30	8.997668	11.002332	8.999827	11.000173	10.002159	9.997841	30	10
51	45	8.997984	11.002016	9.000146	10.999854	10.002162	9.997838	15	9
52	43	8.998299	11.001701	9.000465	10.999535	10.002165	9.997835	17	8
53	15	8.998615	11.001385	9.000783	10.999217	10.002169	9.997831	45	7
54	30	8.998930	11.001070	9.001102	10.998898	10.002172	9.997828	30	6
55	45	8.999245	11.000755	9.001420	10.998580	10.002175	9.997825	15	5
56	44	8.999559	11.000441	9.001737	10.998263	10.002178	9.997822	16	4
57	15	8.999874	11.000126	9.002055	10.997945	10.002181	9.997819	45	3
58	30	9.000188	10.999812	9.002372	10.997628	10.002184	9.997816	30	2
59	45	9.000502	10.999498	9.002690	10.997310	10.002188	9.997812	15	1
60	45	9.000816	10.999184	9.003007	10.996993	10.002191	9.997809	15	0
sec.	"	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	"	sec.
5° 37'.		LOG. SINES, &c.						84 deg.	

0° 23'.		LOG. SINES, &c. (1)						5 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.000816	10.999184	9.003007	10.996993	10.002191	9.997809	15	60
1	15	9.001129	10.998871	9.003323	10.996677	10.002194	9.997806	45	59
2	30	9.001443	10.998557	9.003640	10.996360	10.002197	9.997803	30	58
3	45	9.001756	10.998244	9.003956	10.996044	10.002200	9.997800	15	57
4	46	9.002069	10.997931	9.004272	10.995728	10.002203	9.997797	14	56
5	15	9.002381	10.997619	9.004588	10.995412	10.002207	9.997793	45	55
6	30	9.002694	10.997306	9.004903	10.995097	10.002210	9.997790	30	54
7	45	9.003006	10.996994	9.005219	10.994781	10.002213	9.997787	15	53
8	47	9.003318	10.996682	9.005534	10.994466	10.002216	9.997784	13	52
9	15	9.003630	10.996370	9.005849	10.994151	10.002219	9.997781	45	51
10	30	9.003941	10.996059	9.006164	10.993836	10.002223	9.997777	30	50
11	45	9.004252	10.995748	9.006478	10.993522	10.002226	9.997774	15	49
12	48	9.004563	10.995437	9.006792	10.993208	10.002229	9.997771	12	48
13	15	9.004874	10.995126	9.007106	10.992894	10.002232	9.997768	45	47
14	30	9.005185	10.994815	9.007420	10.992580	10.002235	9.997765	30	46
15	45	9.005495	10.994505	9.007734	10.992266	10.002239	9.997761	15	45
16	49	9.005805	10.994195	9.008047	10.991953	10.002242	9.997758	11	44
17	15	9.006115	10.993885	9.008360	10.991640	10.002245	9.997755	45	43
18	30	9.006425	10.993575	9.008673	10.991327	10.002248	9.997752	30	42
19	45	9.006734	10.993266	9.008986	10.991014	10.002252	9.997748	15	41
20	50	9.007044	10.992956	9.009298	10.990702	10.002255	9.997745	10	40
21	15	9.007353	10.992647	9.009611	10.990389	10.002258	9.997742	45	39
22	30	9.007661	10.992339	9.009923	10.990077	10.002261	9.997739	30	38
23	45	9.007970	10.992030	9.010234	10.989766	10.002264	9.997736	15	37
24	51	9.008278	10.991722	9.010546	10.989454	10.002268	9.997732	9	36
25	15	9.008586	10.991414	9.010857	10.989143	10.002271	9.997729	45	35
26	30	9.008894	10.991106	9.011169	10.988831	10.002274	9.997726	30	34
27	45	9.009202	10.990798	9.011479	10.988521	10.002277	9.997723	15	33
28	52	9.009510	10.990490	9.011790	10.988210	10.002281	9.997719	8	32
29	15	9.009817	10.990183	9.012101	10.987899	10.002284	9.997716	45	31
30	30	9.010124	10.989876	9.012411	10.987589	10.002287	9.997713	30	30
31	45	9.010431	10.989569	9.012721	10.987279	10.002290	9.997710	15	29
32	53	9.010737	10.989263	9.013031	10.986969	10.002294	9.997706	7	28
33	15	9.011044	10.988956	9.013341	10.986659	10.002297	9.997703	45	27
34	30	9.011350	10.988650	9.013650	10.986350	10.002300	9.997700	30	26
35	45	9.011656	10.988344	9.013959	10.986041	10.002303	9.997697	15	25
36	54	9.011962	10.988038	9.014268	10.985732	10.002307	9.997693	6	24
37	15	9.012267	10.987733	9.014577	10.985423	10.002310	9.997690	45	23
38	30	9.012572	10.987428	9.014886	10.985114	10.002313	9.997687	30	22
39	45	9.012877	10.987123	9.015194	10.984806	10.002317	9.997683	15	21
40	55	9.013182	10.986818	9.015502	10.984498	10.002320	9.997680	5	20
41	15	9.013487	10.986513	9.015810	10.984190	10.002323	9.997677	45	19
42	30	9.013791	10.986209	9.016118	10.983882	10.002326	9.997674	30	18
43	45	9.014096	10.985904	9.016425	10.983575	10.002330	9.997670	15	17
44	56	9.014400	10.985600	9.016732	10.983268	10.002333	9.997667	4	16
45	15	9.014703	10.985297	9.017039	10.982961	10.002336	9.997664	45	15
46	30	9.015007	10.984993	9.017346	10.982654	10.002339	9.997661	30	14
47	45	9.015310	10.984690	9.017653	10.982347	10.002343	9.997657	15	13
48	57	9.015613	10.984387	9.017959	10.982041	10.002346	9.997654	3	12
49	15	9.015916	10.984084	9.018266	10.981734	10.002349	9.997651	45	11
50	30	9.016219	10.983781	9.018572	10.981428	10.002353	9.997647	30	10
51	45	9.016522	10.983478	9.018877	10.981123	10.002356	9.997644	15	9
52	58	9.016824	10.983176	9.019183	10.980817	10.002359	9.997641	2	8
53	15	9.017126	10.982874	9.019489	10.980512	10.002363	9.997637	45	7
54	30	9.017428	10.982572	9.019794	10.980206	10.002366	9.997634	30	6
55	45	9.017729	10.982271	9.020099	10.979901	10.002369	9.997631	15	5
56	59	9.018031	10.981969	9.020403	10.979597	10.002372	9.997628	1	4
57	15	9.018332	10.981668	9.020708	10.979292	10.002376	9.997624	45	3
58	30	9.018633	10.981367	9.021012	10.978988	10.002379	9.997621	30	2
59	45	9.018934	10.981066	9.021316	10.978684	10.002382	9.997618	15	1
60	60	9.019235	10.980765	9.021620	10.978380	10.002386	9.997614	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 36'.		LOG. SINES, &c.						84 deg.	

0° 24".		LOG. SINES, &c. (t.)						6 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.019235	10.980765	9.021620	10.978380	10.002386	9.997614	60	60
1	15	9.019535	10.980465	9.021924	10.978076	10.002389	9.997611	45	59
2	30	9.019835	10.980165	9.022227	10.977773	10.002392	9.997608	30	58
3	45	9.020135	10.979865	9.022531	10.977469	10.002396	9.997604	15	57
4	1	9.020435	10.979565	9.022834	10.977166	10.002399	9.997601	59	56
5	15	9.020734	10.979266	9.023137	10.976863	10.002402	9.997598	45	55
6	30	9.021034	10.978966	9.023439	10.976561	10.002406	9.997594	30	54
7	45	9.021333	10.978667	9.023742	10.976258	10.002409	9.997591	15	53
8	2	9.021632	10.978368	9.024044	10.975956	10.002412	9.997588	58	52
9	15	9.021930	10.978070	9.024346	10.975654	10.002416	9.997584	45	51
10	30	9.022229	10.977771	9.024648	10.975352	10.002419	9.997581	30	50
11	45	9.022527	10.977473	9.024950	10.975050	10.002422	9.997578	15	49
12	3	9.022825	10.977175	9.025251	10.974749	10.002426	9.997574	57	48
13	15	9.023123	10.976877	9.025552	10.974448	10.002429	9.997571	45	47
14	30	9.023421	10.976579	9.025853	10.974147	10.002432	9.997568	30	46
15	45	9.023718	10.976282	9.026154	10.973846	10.002436	9.997564	15	45
16	4	9.024016	10.975984	9.026455	10.973545	10.002439	9.997561	56	44
17	15	9.024313	10.975687	9.026755	10.973245	10.002442	9.997558	45	43
18	30	9.024610	10.975390	9.027055	10.972945	10.002446	9.997554	30	42
19	45	9.024906	10.975094	9.027355	10.972645	10.002449	9.997551	15	41
20	5	9.025203	10.974797	9.027655	10.972345	10.002453	9.997547	55	40
21	15	9.025499	10.974501	9.027955	10.972045	10.002456	9.997544	45	39
22	30	9.025795	10.974205	9.028254	10.971746	10.002459	9.997541	30	38
23	45	9.026091	10.973909	9.028553	10.971447	10.002463	9.997537	15	37
24	6	9.026386	10.973614	9.028852	10.971148	10.002466	9.997534	54	36
25	15	9.026682	10.973318	9.029151	10.970849	10.002469	9.997531	45	35
26	30	9.026977	10.973023	9.029450	10.970550	10.002473	9.997527	30	34
27	45	9.027272	10.972728	9.029748	10.970252	10.002476	9.997524	15	33
28	7	9.027567	10.972433	9.030046	10.969954	10.002480	9.997520	53	32
29	15	9.027862	10.972138	9.030344	10.969656	10.002483	9.997517	45	31
30	30	9.028156	10.971844	9.030642	10.969358	10.002486	9.997514	30	30
31	45	9.028450	10.971550	9.030940	10.969060	10.002490	9.997510	15	29
32	8	9.028744	10.971256	9.031237	10.968763	10.002493	9.997507	52	28
33	15	9.029038	10.970962	9.031534	10.968466	10.002497	9.997503	45	27
34	30	9.029332	10.970668	9.031831	10.968169	10.002500	9.997500	30	26
35	45	9.029625	10.970375	9.032128	10.967872	10.002503	9.997497	15	25
36	9	9.029918	10.970082	9.032425	10.967575	10.002507	9.997493	51	24
37	15	9.030211	10.969789	9.032721	10.967279	10.002510	9.997490	45	23
38	30	9.030504	10.969496	9.033017	10.966983	10.002514	9.997486	30	22
39	45	9.030797	10.969203	9.033313	10.966687	10.002517	9.997483	15	21
40	10	9.031089	10.968911	9.033609	10.966391	10.002520	9.997480	50	20
41	15	9.031381	10.968619	9.033905	10.966095	10.002524	9.997476	45	19
42	30	9.031673	10.968327	9.034200	10.965800	10.002527	9.997473	30	18
43	45	9.031965	10.968035	9.034496	10.965504	10.002531	9.997469	15	17
44	11	9.032257	10.967743	9.034791	10.965209	10.002534	9.997466	49	16
45	15	9.032548	10.967452	9.035085	10.964915	10.002537	9.997463	45	15
46	30	9.032839	10.967161	9.035380	10.964620	10.002541	9.997459	30	14
47	45	9.033130	10.966870	9.035675	10.964325	10.002544	9.997456	15	13
48	12	9.033421	10.966579	9.035969	10.964031	10.002548	9.997452	48	12
49	15	9.033712	10.966288	9.036263	10.963737	10.002551	9.997449	45	11
50	30	9.034002	10.965998	9.036557	10.963443	10.002555	9.997445	30	10
51	45	9.034292	10.965708	9.036850	10.963150	10.002558	9.997442	15	9
52	13	9.034582	10.965418	9.037144	10.962856	10.002561	9.997439	47	8
53	15	9.034872	10.965128	9.037437	10.962563	10.002565	9.997435	45	7
54	30	9.035162	10.964838	9.037730	10.962270	10.002568	9.997432	30	6
55	45	9.035451	10.964549	9.038023	10.961977	10.002572	9.997428	15	5
56	14	9.035741	10.964259	9.038316	10.961684	10.002575	9.997425	46	4
57	15	9.036030	10.963970	9.038608	10.961392	10.002579	9.997421	45	3
58	30	9.036319	10.963681	9.038901	10.961099	10.002582	9.997418	30	2
59	45	9.036607	10.963393	9.039193	10.960807	10.002586	9.997414	15	1
60	15	9.036896	10.963104	9.039485	10.960515	10.002589	9.997411	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 35".		LOG. SINES, &c.						83 deg.	

0 ^h 25 ^m .		LOG. SINES, &c. (t.)						6 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.036896	10.963104	9.039485	10.960515	10.002589	9.997411	45	60
1	15	9.037184	10.962816	9.039776	10.960224	10.002593	9.997407	45	59
2	30	9.037472	10.962528	9.040068	10.959932	10.002596	9.997404	30	58
3	45	9.037760	10.962240	9.040359	10.959641	10.002599	9.997401	15	57
4	16	9.038048	10.961952	9.040651	10.959349	10.002603	9.997397	44	56
5	15	9.038335	10.961665	9.040942	10.959058	10.002606	9.997394	45	55
6	30	9.038623	10.961377	9.041232	10.958768	10.002610	9.997390	30	54
7	45	9.038910	10.961090	9.041523	10.958477	10.002613	9.997387	15	53
8	17	9.039197	10.960803	9.041813	10.958187	10.002617	9.997383	43	52
9	15	9.039483	10.960517	9.042104	10.957896	10.002620	9.997380	45	51
10	30	9.039770	10.960230	9.042394	10.957606	10.002624	9.997376	30	50
11	45	9.040056	10.959944	9.042683	10.957317	10.002627	9.997373	15	49
12	18	9.040342	10.959658	9.042973	10.957027	10.002631	9.997369	42	48
13	15	9.040628	10.959372	9.043263	10.956737	10.002634	9.997366	45	47
14	30	9.040914	10.959086	9.043552	10.956448	10.002638	9.997362	30	46
15	45	9.041200	10.958800	9.043841	10.956159	10.002641	9.997359	15	45
16	19	9.041485	10.958515	9.044130	10.955870	10.002645	9.997355	41	44
17	15	9.041770	10.958230	9.044419	10.955581	10.002648	9.997352	45	43
18	30	9.042055	10.957945	9.044707	10.955293	10.002652	9.997348	30	42
19	45	9.042340	10.957660	9.044995	10.955005	10.002655	9.997345	15	41
20	20	9.042625	10.957375	9.045284	10.954716	10.002659	9.997341	40	40
21	15	9.042909	10.957091	9.045572	10.954428	10.002662	9.997338	45	39
22	30	9.043194	10.956806	9.045859	10.954141	10.002666	9.997334	30	38
23	45	9.043478	10.956522	9.046147	10.953853	10.002669	9.997331	15	37
24	21	9.043762	10.956238	9.046434	10.953566	10.002673	9.997327	39	36
25	15	9.044045	10.955955	9.046722	10.953278	10.002676	9.997324	45	35
26	30	9.044329	10.955671	9.047009	10.952991	10.002680	9.997320	30	34
27	45	9.044612	10.955388	9.047295	10.952705	10.002683	9.997317	15	33
28	22	9.044895	10.955105	9.047582	10.952418	10.002687	9.997313	38	32
29	15	9.045178	10.954822	9.047869	10.952131	10.002690	9.997310	45	31
30	30	9.045461	10.954539	9.048155	10.951845	10.002694	9.997306	30	30
31	45	9.045744	10.954256	9.048441	10.951559	10.002697	9.997303	15	29
32	23	9.046026	10.953974	9.048727	10.951273	10.002701	9.997299	37	28
33	15	9.046308	10.953692	9.049013	10.950987	10.002704	9.997296	45	27
34	30	9.046590	10.953410	9.049298	10.950702	10.002708	9.997292	30	26
35	45	9.046872	10.953128	9.049584	10.950416	10.002712	9.997288	15	25
36	24	9.047154	10.952846	9.049869	10.950131	10.002715	9.997285	36	24
37	15	9.047435	10.952565	9.050154	10.949846	10.002719	9.997281	45	23
38	30	9.047717	10.952283	9.050439	10.949561	10.002722	9.997278	30	22
39	45	9.047998	10.952002	9.050723	10.949277	10.002726	9.997274	15	21
40	25	9.048279	10.951721	9.051008	10.948992	10.002729	9.997271	35	20
41	15	9.048559	10.951441	9.051292	10.948708	10.002733	9.997267	45	19
42	30	9.048840	10.951160	9.051576	10.948424	10.002736	9.997264	30	18
43	45	9.049120	10.950880	9.051860	10.948140	10.002740	9.997260	15	17
44	26	9.049400	10.950600	9.052144	10.947856	10.002743	9.997257	34	16
45	15	9.049680	10.950320	9.052427	10.947573	10.002747	9.997253	45	15
46	30	9.049960	10.950040	9.052711	10.947289	10.002751	9.997249	30	14
47	45	9.050240	10.949760	9.052994	10.947006	10.002754	9.997246	15	13
48	27	9.050519	10.949481	9.053277	10.946723	10.002758	9.997242	33	12
49	15	9.050799	10.949201	9.053560	10.946440	10.002761	9.997239	45	11
50	30	9.051078	10.948922	9.053843	10.946157	10.002765	9.997235	30	10
51	45	9.051357	10.948643	9.054125	10.945875	10.002768	9.997232	15	9
52	28	9.051635	10.948365	9.054407	10.945593	10.002772	9.997228	32	8
53	15	9.051914	10.948086	9.054689	10.945311	10.002776	9.997224	45	7
54	30	9.052192	10.947808	9.054971	10.945029	10.002779	9.997221	30	6
55	45	9.052470	10.947530	9.055253	10.944747	10.002783	9.997217	15	5
56	29	9.052748	10.947252	9.055535	10.944465	10.002786	9.997214	31	4
57	15	9.053026	10.946974	9.055816	10.944184	10.002790	9.997210	45	3
58	30	9.053304	10.946696	9.056097	10.943903	10.002794	9.997206	30	2
59	45	9.053581	10.946419	9.056379	10.943621	10.002797	9.997203	15	1
60	30	9.053859	10.946141	9.056659	10.943341	10.002801	9.997199	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5 ^h 34 ^m .		LOG. SINES, &c.						83 deg.	

0° 26'		LOG. SINES, &c. (t.)						6 deg.	
sec.	min.	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	min.	sec.
0	30	9.053859	10.946141	9.056659	10.943341	10.002801	9.997199	30	60
1	15	9.054136	10.945864	9.056940	10.943060	10.002804	9.997196	45	59
2	30	9.054413	10.945587	9.057221	10.942779	10.002808	9.997192	30	58
3	45	9.054689	10.945311	9.057501	10.942498	10.002812	9.997188	15	57
4	31	9.054966	10.945034	9.057781	10.942219	10.002815	9.997185	29	56
5	15	9.055242	10.944758	9.058061	10.941939	10.002819	9.997181	45	55
6	30	9.055519	10.944481	9.058341	10.941659	10.002822	9.997178	30	54
7	45	9.055795	10.944205	9.058621	10.941379	10.002826	9.997174	15	53
8	32	9.056071	10.943929	9.058900	10.941100	10.002830	9.997170	28	52
9	15	9.056346	10.943654	9.059179	10.940821	10.002833	9.997167	45	51
10	30	9.056622	10.943378	9.059459	10.940541	10.002837	9.997163	30	50
11	45	9.056897	10.943103	9.059738	10.940262	10.002840	9.997160	15	49
12	33	9.057172	10.942828	9.060016	10.939984	10.002844	9.997156	27	48
13	15	9.057447	10.942553	9.060295	10.939705	10.002848	9.997152	45	47
14	30	9.057722	10.942278	9.060573	10.939427	10.002851	9.997149	30	46
15	45	9.058003	10.942003	9.060852	10.939148	10.002855	9.997145	15	45
16	34	9.058271	10.941729	9.061130	10.938870	10.002859	9.997141	26	44
17	15	9.058545	10.941455	9.061408	10.938592	10.002862	9.997138	45	43
18	30	9.058819	10.941181	9.061685	10.938315	10.002866	9.997134	30	42
19	45	9.059093	10.940907	9.061963	10.938037	10.002870	9.997130	15	41
20	35	9.059367	10.940633	9.062240	10.937760	10.002873	9.997127	25	40
21	15	9.059641	10.940359	9.062518	10.937482	10.002877	9.997123	45	39
22	30	9.059914	10.940086	9.062795	10.937205	10.002880	9.997120	30	38
23	45	9.060187	10.939813	9.063071	10.936929	10.002884	9.997116	15	37
24	36	9.060460	10.939540	9.063348	10.936652	10.002888	9.997112	24	36
25	15	9.060733	10.939267	9.063625	10.936375	10.002891	9.997109	45	35
26	30	9.061006	10.938994	9.063901	10.936099	10.002895	9.997105	30	34
27	45	9.061278	10.938722	9.064177	10.935823	10.002899	9.997101	15	33
28	37	9.061551	10.938449	9.064453	10.935547	10.002902	9.997098	23	32
29	15	9.061823	10.938177	9.064729	10.935271	10.002906	9.997094	45	31
30	30	9.062095	10.937905	9.065005	10.934995	10.002910	9.997090	30	30
31	45	9.062367	10.937633	9.065280	10.934720	10.002913	9.997087	15	29
32	38	9.062639	10.937361	9.065556	10.934444	10.002917	9.997083	22	28
33	15	9.062910	10.937090	9.065831	10.934169	10.002921	9.997079	45	27
34	30	9.063181	10.936819	9.066106	10.933894	10.002924	9.997076	30	26
35	45	9.063452	10.936548	9.066381	10.933619	10.002928	9.997072	15	25
36	39	9.063723	10.936277	9.066655	10.933345	10.002932	9.997068	21	24
37	15	9.063994	10.936006	9.066930	10.933070	10.002936	9.997064	45	23
38	30	9.064265	10.935735	9.067204	10.932796	10.002939	9.997061	30	22
39	45	9.064535	10.935465	9.067478	10.932522	10.002943	9.997057	15	21
40	40	9.064806	10.935194	9.067752	10.932248	10.002947	9.997053	20	20
41	15	9.065076	10.934924	9.068026	10.931974	10.002950	9.997050	45	19
42	30	9.065346	10.934654	9.068300	10.931700	10.002954	9.997046	30	18
43	45	9.065616	10.934384	9.068573	10.931427	10.002958	9.997042	15	17
44	41	9.065885	10.934115	9.068846	10.931154	10.002961	9.997039	19	16
45	15	9.066155	10.933845	9.069120	10.930880	10.002965	9.997035	45	15
46	30	9.066424	10.933576	9.069393	10.930607	10.002969	9.997031	30	14
47	45	9.066693	10.933307	9.069665	10.930335	10.002972	9.997028	15	13
48	42	9.066962	10.933038	9.069938	10.930062	10.002976	9.997024	18	12
49	15	9.067231	10.932769	9.070210	10.929790	10.002980	9.997020	45	11
50	30	9.067499	10.932501	9.070483	10.929517	10.002984	9.997016	30	10
51	45	9.067768	10.932232	9.070755	10.929245	10.002987	9.997013	15	9
52	43	9.068036	10.931964	9.071027	10.928973	10.002991	9.997009	17	8
53	15	9.068304	10.931696	9.071299	10.928701	10.002995	9.997005	45	7
54	30	9.068572	10.931428	9.071570	10.928430	10.002998	9.997002	30	6
55	45	9.068840	10.931160	9.071842	10.928158	10.003002	9.996998	15	5
56	44	9.069107	10.930893	9.072113	10.927887	10.003006	9.996994	16	4
57	15	9.069375	10.930625	9.072384	10.927616	10.003010	9.996990	45	3
58	30	9.069642	10.930358	9.072655	10.927345	10.003013	9.996987	30	2
59	45	9.069909	10.930091	9.072926	10.927074	10.003017	9.996983	15	1
60	45	9.070176	10.929824	9.073197	10.926803	10.003021	9.996979	15	0
sec.	min.	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	min.	sec.
5° 33'		LOG. SINES, &c.						83 deg.	

0 ^h 27 ^m .		LOG. SINES, &c. (t.)						6 deg.	
sec.	"	sine.	co-secant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.070176	10.929824	9.073197	10.926803	10.003021	9.996979	15	60
1	15	9.070443	10.929557	9.073467	10.926533	10.003025	9.996975	45	59
2	30	9.070709	10.929291	9.073738	10.926262	10.003028	9.996972	30	58
3	45	9.070976	10.929024	9.074008	10.925992	10.003032	9.996968	15	57
4	46	9.071242	10.928758	9.074278	10.925722	10.003036	9.996964	14	56
5	15	9.071508	10.928492	9.074548	10.925452	10.003040	9.996960	45	55
6	30	9.071774	10.928226	9.074817	10.925183	10.003043	9.996957	30	54
7	45	9.072040	10.927960	9.075087	10.924913	10.003047	9.996953	15	53
8	47	9.072305	10.927695	9.075356	10.924644	10.003051	9.996949	13	52
9	15	9.072571	10.927429	9.075625	10.924375	10.003055	9.996945	45	51
10	30	9.072836	10.927164	9.075894	10.924106	10.003058	9.996942	30	50
11	45	9.073101	10.926899	9.076163	10.923837	10.003062	9.996938	15	49
12	48	9.073366	10.926634	9.076432	10.923568	10.003066	9.996934	12	48
13	15	9.073631	10.926369	9.076701	10.923299	10.003070	9.996930	45	47
14	30	9.073896	10.926104	9.076969	10.923031	10.003073	9.996927	30	46
15	45	9.074160	10.925840	9.077237	10.922763	10.003077	9.996923	15	45
16	49	9.074424	10.925576	9.077505	10.922495	10.003081	9.996919	11	44
17	15	9.074688	10.925312	9.077773	10.922227	10.003085	9.996915	45	43
18	30	9.074952	10.925048	9.078041	10.921959	10.003089	9.996911	30	42
19	45	9.075216	10.924784	9.078308	10.921692	10.003092	9.996908	15	41
20	50	9.075480	10.924520	9.078576	10.921424	10.003096	9.996904	10	40
21	15	9.075743	10.924257	9.078843	10.921157	10.003100	9.996900	45	39
22	30	9.076007	10.923993	9.079110	10.920890	10.003104	9.996896	30	38
23	45	9.076270	10.923730	9.079377	10.920623	10.003107	9.996893	15	37
24	51	9.076533	10.923467	9.079644	10.920356	10.003111	9.996889	9	36
25	15	9.076796	10.923204	9.079911	10.920089	10.003115	9.996885	45	35
26	30	9.077058	10.922942	9.080177	10.919823	10.003119	9.996881	30	34
27	45	9.077321	10.922679	9.080443	10.919557	10.003123	9.996877	15	33
28	52	9.077583	10.922417	9.080710	10.919290	10.003126	9.996874	8	32
29	15	9.077845	10.922155	9.080976	10.919024	10.003130	9.996870	45	31
30	30	9.078107	10.921893	9.081241	10.918759	10.003134	9.996866	30	30
31	45	9.078369	10.921631	9.081507	10.918493	10.003138	9.996862	15	29
32	53	9.078631	10.921369	9.081773	10.918227	10.003142	9.996858	7	28
33	15	9.078892	10.921108	9.082038	10.917962	10.003145	9.996855	45	27
34	30	9.079154	10.920846	9.082303	10.917697	10.003149	9.996851	30	26
35	45	9.079415	10.920585	9.082568	10.917432	10.003153	9.996847	15	25
36	54	9.079676	10.920324	9.082833	10.917167	10.003157	9.996843	6	24
37	15	9.079937	10.920063	9.083098	10.916902	10.003161	9.996839	45	23
38	30	9.080198	10.919802	9.083362	10.916638	10.003165	9.996835	30	22
39	45	9.080458	10.919542	9.083627	10.916373	10.003168	9.996832	15	21
40	55	9.080719	10.919281	9.083891	10.916109	10.003172	9.996828	5	20
41	15	9.080979	10.919021	9.084155	10.915845	10.003176	9.996824	45	19
42	30	9.081239	10.918761	9.084419	10.915581	10.003180	9.996820	30	18
43	45	9.081499	10.918501	9.084683	10.915317	10.003184	9.996816	15	17
44	56	9.081759	10.918241	9.084947	10.915053	10.003188	9.996812	4	16
45	15	9.082019	10.917981	9.085210	10.914790	10.003191	9.996809	45	15
46	30	9.082278	10.917722	9.085473	10.914527	10.003195	9.996805	30	14
47	45	9.082537	10.917463	9.085736	10.914264	10.003199	9.996801	15	13
48	57	9.082797	10.917203	9.086000	10.914000	10.003203	9.996797	3	12
49	15	9.083056	10.916944	9.086262	10.913738	10.003207	9.996793	45	11
50	30	9.083314	10.916686	9.086525	10.913475	10.003211	9.996789	30	10
51	45	9.083573	10.916427	9.086788	10.913212	10.003215	9.996785	15	9
52	58	9.083832	10.916168	9.087050	10.912950	10.003218	9.996782	2	8
53	15	9.084090	10.915910	9.087312	10.912688	10.003222	9.996778	45	7
54	30	9.084348	10.915652	9.087574	10.912426	10.003226	9.996774	30	6
55	45	9.084606	10.915394	9.087836	10.912164	10.003230	9.996770	15	5
56	59	9.084864	10.915136	9.088098	10.911902	10.003234	9.996766	1	4
57	15	9.085122	10.914878	9.088360	10.911640	10.003238	9.996762	45	3
58	30	9.085380	10.914620	9.088621	10.911379	10.003242	9.996758	30	2
59	45	9.085637	10.914363	9.088883	10.911117	10.003245	9.996755	15	1
60	60	9.085894	10.914106	9.089144	10.910856	10.003249	9.996751	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5 ^h 32 ^m .		LOG. SINES, &c.						83 deg.	

0° 28'		LOG. SINES, &c. (L.)						7 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.085894	10.914106	9.080144	10.910856	10.003249	9.996751	60	60
1	15	9.086152	10.913848	9.089405	10.910595	10.003253	9.996747	45	59
2	30	9.086409	10.913591	9.089666	10.910334	10.003257	9.996743	30	58
3	45	9.086665	10.913335	9.089926	10.910074	10.003261	9.996739	15	57
4	1	9.086922	10.913078	9.090187	10.909813	10.003265	9.996735	59	56
5	15	9.087179	10.912821	9.090447	10.909553	10.003269	9.996731	45	55
6	30	9.087435	10.912565	9.090708	10.909292	10.003273	9.996727	30	54
7	45	9.087691	10.912309	9.090968	10.909032	10.003277	9.996723	15	53
8	2	9.087947	10.912053	9.091228	10.908772	10.003280	9.996720	58	52
9	15	9.088203	10.911797	9.091487	10.908513	10.003284	9.996716	45	51
10	30	9.088459	10.911541	9.091747	10.908253	10.003288	9.996712	30	50
11	45	9.088715	10.911285	9.092007	10.907993	10.003292	9.996708	15	49
12	3	9.088970	10.911030	9.092266	10.907734	10.003296	9.996704	57	48
13	15	9.089225	10.910775	9.092525	10.907475	10.003300	9.996700	45	47
14	30	9.089480	10.910520	9.092784	10.907216	10.003304	9.996696	30	46
15	45	9.089735	10.910265	9.093043	10.906957	10.003308	9.996692	15	45
16	4	9.089990	10.910010	9.093302	10.906698	10.003312	9.996688	56	44
17	15	9.090245	10.909755	9.093561	10.906439	10.003316	9.996684	45	43
18	30	9.090500	10.909500	9.093819	10.906181	10.003320	9.996680	30	42
19	45	9.090754	10.909246	9.094077	10.905923	10.003323	9.996677	15	41
20	5	9.091008	10.908992	9.094335	10.905665	10.003327	9.996673	55	40
21	15	9.091262	10.908738	9.094593	10.905407	10.003331	9.996669	45	39
22	30	9.091516	10.908484	9.094851	10.905149	10.003335	9.996665	30	38
23	45	9.091770	10.908230	9.095109	10.904891	10.003339	9.996661	15	37
24	6	9.092024	10.907976	9.095367	10.904633	10.003343	9.996657	54	36
25	15	9.092277	10.907723	9.095624	10.904376	10.003347	9.996653	45	35
26	30	9.092530	10.907470	9.095881	10.904119	10.003351	9.996649	30	34
27	45	9.092784	10.907216	9.096138	10.903862	10.003355	9.996645	15	33
28	7	9.093037	10.906963	9.096395	10.903605	10.003359	9.996641	53	32
29	15	9.093290	10.906710	9.096652	10.903348	10.003363	9.996637	45	31
30	30	9.093542	10.906458	9.096909	10.903091	10.003367	9.996633	30	30
31	45	9.093795	10.906205	9.097165	10.902835	10.003371	9.996629	15	29
32	8	9.094047	10.905953	9.097422	10.902578	10.003375	9.996625	52	28
33	15	9.094300	10.905700	9.097678	10.902322	10.003379	9.996621	45	27
34	30	9.094552	10.905448	9.097934	10.902066	10.003383	9.996617	30	26
35	45	9.094804	10.905196	9.098190	10.901810	10.003386	9.996614	15	25
36	9	9.095056	10.904944	9.098446	10.901554	10.003390	9.996610	51	24
37	15	9.095307	10.904693	9.098702	10.901298	10.003394	9.996606	45	23
38	30	9.095559	10.904441	9.098957	10.901043	10.003398	9.996602	30	22
39	45	9.095810	10.904190	9.099213	10.900787	10.003402	9.996598	15	21
40	10	9.096061	10.903939	9.099468	10.900532	10.003406	9.996594	50	20
41	15	9.096313	10.903687	9.099723	10.900277	10.003410	9.996590	45	19
42	30	9.096564	10.903436	9.099978	10.900022	10.003414	9.996586	30	18
43	45	9.096814	10.903186	9.100233	10.899767	10.003418	9.996582	15	17
44	11	9.097065	10.902935	9.100487	10.899513	10.003422	9.996578	49	16
45	15	9.097316	10.902684	9.100742	10.899258	10.003426	9.996574	45	15
46	30	9.097566	10.902434	9.100996	10.899004	10.003430	9.996570	30	14
47	45	9.097816	10.902184	9.101250	10.898750	10.003434	9.996566	15	13
48	12	9.098066	10.901934	9.101504	10.898496	10.003438	9.996562	48	12
49	15	9.098316	10.901684	9.101758	10.898242	10.003442	9.996558	45	11
50	30	9.098566	10.901434	9.102012	10.897988	10.003446	9.996554	30	10
51	45	9.098816	10.901184	9.102266	10.897734	10.003450	9.996550	15	9
52	13	9.099065	10.900935	9.102519	10.897481	10.003454	9.996546	47	8
53	15	9.099314	10.900686	9.102772	10.897228	10.003458	9.996542	45	7
54	30	9.099564	10.900436	9.103026	10.896974	10.003462	9.996538	30	6
55	45	9.099813	10.900187	9.103279	10.896721	10.003466	9.996534	15	5
56	14	9.100062	10.899938	9.103532	10.896468	10.003470	9.996530	46	4
57	15	9.100310	10.899690	9.103784	10.896216	10.003474	9.996526	45	3
58	30	9.100559	10.899441	9.104037	10.895963	10.003478	9.996522	30	2
59	45	9.100807	10.899193	9.104290	10.895710	10.003482	9.996518	15	1
60	15	9.101056	10.898944	9.104542	10.895458	10.003486	9.996514	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 31'		LOG. SINES, &c.						52 deg.	

0 ^h 29 ^m .		LOG. SINES, &c. (t)						7 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	15	9.101056	10.898944	9.104542	10.895458	10.003486	9.996514	45	60
1	15	9.101304	10.898696	9.104794	10.895206	10.003490	9.996510	45	59
2	30	9.101552	10.898448	9.105046	10.894954	10.003494	9.996506	30	58
3	45	9.101800	10.898200	9.105298	10.894702	10.003498	9.996502	15	57
4	16	9.102048	10.897952	9.105550	10.894450	10.003502	9.996498	44	56
5	15	9.102295	10.897705	9.105802	10.894198	10.003506	9.996494	45	55
6	30	9.102543	10.897457	9.106053	10.893947	10.003510	9.996490	30	54
7	45	9.102790	10.897210	9.106304	10.893696	10.003514	9.996486	15	53
8	17	9.103037	10.896963	9.106556	10.893444	10.003518	9.996482	43	52
9	15	9.103284	10.896716	9.106807	10.893193	10.003522	9.996478	45	51
10	30	9.103531	10.896469	9.107058	10.892942	10.003527	9.996473	30	50
11	45	9.103778	10.896222	9.107308	10.892692	10.003531	9.996469	15	49
12	18	9.104025	10.895975	9.107559	10.892441	10.003535	9.996465	42	48
13	15	9.104271	10.895729	9.107810	10.892190	10.003539	9.996461	45	47
14	30	9.104517	10.895483	9.108060	10.891940	10.003543	9.996457	30	46
15	45	9.104764	10.895236	9.108310	10.891690	10.003547	9.996453	15	45
16	19	9.105010	10.894990	9.108560	10.891440	10.003551	9.996449	41	44
17	15	9.105255	10.894745	9.108810	10.891190	10.003555	9.996445	45	43
18	30	9.105501	10.894499	9.109060	10.890940	10.003559	9.996441	30	42
19	45	9.105747	10.894253	9.109310	10.890690	10.003563	9.996437	15	41
20	20	9.105992	10.894008	9.109559	10.890441	10.003567	9.996433	40	40
21	15	9.106238	10.893762	9.109809	10.890191	10.003571	9.996429	45	39
22	30	9.106483	10.893517	9.110058	10.889942	10.003575	9.996425	30	38
23	45	9.106728	10.893272	9.110307	10.889693	10.003579	9.996421	15	37
24	21	9.106973	10.893027	9.110556	10.889444	10.003583	9.996417	39	36
25	15	9.107218	10.892782	9.110805	10.889195	10.003587	9.996413	45	35
26	30	9.107462	10.892538	9.111054	10.888946	10.003591	9.996409	30	34
27	45	9.107707	10.892293	9.111302	10.888698	10.003596	9.996404	15	33
28	22	9.107951	10.892049	9.111551	10.888449	10.003600	9.996400	38	32
29	15	9.108195	10.891805	9.111799	10.888201	10.003604	9.996396	45	31
30	30	9.108439	10.891561	9.112047	10.887953	10.003608	9.996392	30	30
31	45	9.108683	10.891317	9.112295	10.887705	10.003612	9.996388	15	29
32	23	9.108927	10.891073	9.112543	10.887457	10.003616	9.996384	37	28
33	15	9.109171	10.890829	9.112791	10.887209	10.003620	9.996380	45	27
34	30	9.109414	10.890586	9.113038	10.886962	10.003624	9.996376	30	26
35	45	9.109658	10.890342	9.113286	10.886714	10.003628	9.996372	15	25
36	24	9.109901	10.890099	9.113533	10.886467	10.003632	9.996368	36	24
37	15	9.110144	10.889856	9.113780	10.886220	10.003636	9.996364	45	23
38	30	9.110387	10.889613	9.114028	10.885972	10.003641	9.996359	30	22
39	45	9.110630	10.889370	9.114274	10.885726	10.003645	9.996355	15	21
40	25	9.110873	10.889127	9.114521	10.885479	10.003649	9.996351	35	20
41	15	9.111115	10.888885	9.114768	10.885232	10.003653	9.996347	45	19
42	30	9.111358	10.888642	9.115014	10.884986	10.003657	9.996343	30	18
43	45	9.111600	10.888400	9.115261	10.884739	10.003661	9.996339	15	17
44	26	9.111842	10.888158	9.115507	10.884493	10.003665	9.996335	34	16
45	15	9.112084	10.887916	9.115753	10.884247	10.003669	9.996331	45	15
46	30	9.112326	10.887674	9.115999	10.884001	10.003674	9.996326	30	14
47	45	9.112568	10.887432	9.116245	10.883755	10.003678	9.996322	15	13
48	27	9.112809	10.887191	9.116491	10.883509	10.003682	9.996318	33	12
49	15	9.113051	10.886949	9.116736	10.883264	10.003686	9.996314	45	11
50	30	9.113292	10.886708	9.116982	10.883018	10.003690	9.996310	30	10
51	45	9.113533	10.886467	9.117227	10.882773	10.003694	9.996306	15	9
52	28	9.113774	10.886226	9.117472	10.882528	10.003698	9.996302	32	8
53	15	9.114015	10.885985	9.117717	10.882283	10.003702	9.996298	45	7
54	30	9.114256	10.885744	9.117962	10.882038	10.003707	9.996293	30	6
55	45	9.114496	10.885504	9.118207	10.881793	10.003711	9.996289	15	5
56	29	9.114737	10.885263	9.118452	10.881548	10.003715	9.996285	31	4
57	15	9.114977	10.885023	9.118696	10.881304	10.003719	9.996281	45	3
58	30	9.115218	10.884782	9.118941	10.881059	10.003723	9.996277	30	2
59	45	9.115458	10.884542	9.119185	10.880815	10.003727	9.996273	15	1
60	30	9.115698	10.884302	9.119429	10.880571	10.003731	9.996269	30	0
sec.	"	cosec.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5 ^h 30 ^m .		LOG. SINES, &c.						82 deg.	

0° 30'.		LOG. SINES, &c. (t.)						7 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	9.115698	10.884302	9.119429	10.880571	10.003731	9.996269	30	60
1	15	9.115937	10.884063	9.119673	10.880327	10.003736	9.996264	45	50
2	30	9.116177	10.883823	9.119917	10.880083	10.003740	9.996260	30	58
3	45	9.116417	10.883583	9.120161	10.879839	10.003744	9.996256	15	57
4	31	9.116656	10.883344	9.120404	10.879596	10.003748	9.996252	29	56
5	15	9.116895	10.883105	9.120648	10.879352	10.003752	9.996248	45	55
6	30	9.117135	10.882865	9.120891	10.879109	10.003756	9.996244	30	54
7	45	9.117374	10.882626	9.121134	10.878866	10.003761	9.996239	15	53
8	32	9.117612	10.882388	9.121377	10.878623	10.003765	9.996235	28	52
9	15	9.117851	10.882149	9.121620	10.878380	10.003769	9.996231	45	51
10	30	9.118090	10.881910	9.121863	10.878137	10.003773	9.996227	30	50
11	45	9.118328	10.881672	9.122106	10.877894	10.003777	9.996223	15	49
12	33	9.118567	10.881433	9.122348	10.877652	10.003782	9.996218	27	48
13	15	9.118805	10.881195	9.122591	10.877409	10.003786	9.996214	45	47
14	30	9.119043	10.880957	9.122833	10.877167	10.003790	9.996210	30	46
15	45	9.119281	10.880719	9.123075	10.876925	10.003794	9.996206	15	45
16	34	9.119519	10.880481	9.123317	10.876683	10.003798	9.996202	26	44
17	15	9.119756	10.880244	9.123559	10.876441	10.003803	9.996197	45	43
18	30	9.119994	10.880006	9.123801	10.876199	10.003807	9.996193	30	42
19	45	9.120231	10.879769	9.124042	10.875958	10.003811	9.996189	15	41
20	35	9.120469	10.879531	9.124284	10.875716	10.003815	9.996185	25	40
21	15	9.120706	10.879294	9.124525	10.875475	10.003819	9.996181	45	39
22	30	9.120943	10.879057	9.124766	10.875234	10.003824	9.996176	30	38
23	45	9.121180	10.878820	9.125008	10.874992	10.003828	9.996172	15	37
24	36	9.121417	10.878583	9.125249	10.874751	10.003832	9.996168	24	36
25	15	9.121653	10.878347	9.125489	10.874511	10.003836	9.996164	45	35
26	30	9.121890	10.878110	9.125730	10.874270	10.003840	9.996160	30	34
27	45	9.122126	10.877874	9.125971	10.874029	10.003845	9.996155	15	33
28	37	9.122362	10.877638	9.126211	10.873789	10.003849	9.996151	23	32
29	15	9.122598	10.877402	9.126451	10.873549	10.003853	9.996147	45	31
30	30	9.122834	10.877166	9.126692	10.873308	10.003857	9.996143	30	30
31	45	9.123070	10.876930	9.126932	10.873068	10.003862	9.996138	15	29
32	38	9.123306	10.876694	9.127172	10.872828	10.003866	9.996134	22	28
33	15	9.123542	10.876458	9.127412	10.872588	10.003870	9.996130	45	27
34	30	9.123777	10.876223	9.127651	10.872349	10.003874	9.996126	30	26
35	45	9.124012	10.875988	9.127891	10.872109	10.003878	9.996122	15	25
36	39	9.124248	10.875752	9.128130	10.871870	10.003883	9.996117	21	24
37	15	9.124483	10.875517	9.128370	10.871630	10.003887	9.996113	45	23
38	30	9.124718	10.875282	9.128609	10.871391	10.003891	9.996109	30	22
39	45	9.124952	10.875048	9.128848	10.871152	10.003895	9.996105	15	21
40	40	9.125187	10.874813	9.129087	10.870913	10.003900	9.996100	20	20
41	15	9.125422	10.874578	9.129326	10.870674	10.003904	9.996096	45	19
42	30	9.125656	10.874344	9.129564	10.870436	10.003908	9.996092	30	18
43	45	9.125890	10.874110	9.129803	10.870197	10.003912	9.996088	15	17
44	41	9.126125	10.873875	9.130041	10.869959	10.003917	9.996083	19	16
45	15	9.126359	10.873641	9.130280	10.869720	10.003921	9.996079	45	15
46	30	9.126593	10.873407	9.130518	10.869482	10.003925	9.996075	30	14
47	45	9.126826	10.873174	9.130756	10.869244	10.003929	9.996071	15	13
48	42	9.127060	10.872940	9.130994	10.869006	10.003934	9.996066	18	12
49	15	9.127294	10.872706	9.131231	10.868769	10.003938	9.996062	45	11
50	30	9.127527	10.872473	9.131469	10.868531	10.003942	9.996058	30	10
51	45	9.127760	10.872240	9.131707	10.868293	10.003947	9.996053	15	9
52	43	9.127993	10.872007	9.131944	10.868056	10.003951	9.996049	17	8
53	15	9.128226	10.871774	9.132181	10.867819	10.003955	9.996045	45	7
54	30	9.128459	10.871541	9.132419	10.867581	10.003959	9.996041	30	6
55	45	9.128692	10.871308	9.132656	10.867344	10.003964	9.996036	15	5
56	44	9.128925	10.871075	9.132893	10.867107	10.003968	9.996032	16	4
57	15	9.129157	10.870843	9.133129	10.866871	10.003972	9.996028	45	3
58	30	9.129390	10.870610	9.133366	10.866634	10.003977	9.996023	30	2
59	45	9.129622	10.870378	9.133603	10.866397	10.003981	9.996019	15	1
60	45	9.129854	10.870146	9.133839	10.866161	10.003985	9.996015	15	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 29'.		LOG. SINES, &c.						52 deg.	

0° 31'		LOG. SINES, &c. (t)						7 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.129854	10.870146	9.133839	10.866161	10.003985	9.996015	15	60
1	15	9.130086	10.869914	9.134075	10.865925	10.003989	9.996011	45	59
2	30	9.130318	10.869682	9.134311	10.865689	10.003994	9.996006	30	58
3	45	9.130550	10.869450	9.134548	10.865452	10.003998	9.996002	15	57
4	46	9.130781	10.869219	9.134783	10.865217	10.004002	9.995998	14	56
5	15	9.131013	10.868987	9.135019	10.864981	10.004007	9.995993	45	55
6	30	9.131244	10.868756	9.135255	10.864745	10.004011	9.995989	30	54
7	45	9.131475	10.868525	9.135491	10.864509	10.004015	9.995985	15	53
8	47	9.131706	10.868294	9.135726	10.864274	10.004020	9.995980	13	52
9	15	9.131937	10.868063	9.135961	10.864039	10.004024	9.995976	45	51
10	30	9.132168	10.867832	9.136196	10.863804	10.004028	9.995972	30	50
11	45	9.132399	10.867601	9.136432	10.863568	10.004033	9.995967	15	49
12	48	9.132630	10.867370	9.136666	10.863334	10.004037	9.995963	12	48
13	15	9.132860	10.867140	9.136901	10.863099	10.004041	9.995959	45	47
14	30	9.133091	10.866909	9.137136	10.862864	10.004046	9.995954	30	46
15	45	9.133321	10.866679	9.137371	10.862629	10.004050	9.995950	15	45
16	49	9.133551	10.866449	9.137605	10.862395	10.004054	9.995946	11	44
17	15	9.133781	10.866219	9.137839	10.862161	10.004059	9.995941	45	43
18	30	9.134011	10.865989	9.138074	10.861926	10.004063	9.995937	30	42
19	45	9.134241	10.865759	9.138308	10.861692	10.004067	9.995933	15	41
20	50	9.134470	10.865530	9.138542	10.861458	10.004072	9.995928	10	40
21	15	9.134700	10.865300	9.138776	10.861224	10.004076	9.995924	45	39
22	30	9.134929	10.865071	9.139009	10.860991	10.004080	9.995920	30	38
23	45	9.135158	10.864842	9.139243	10.860757	10.004085	9.995915	15	37
24	51	9.135387	10.864613	9.139476	10.860524	10.004089	9.995911	9	36
25	15	9.135616	10.864384	9.139710	10.860290	10.004093	9.995907	45	35
26	30	9.135845	10.864155	9.139943	10.860057	10.004098	9.995902	30	34
27	45	9.136074	10.863926	9.140176	10.859824	10.004102	9.995898	15	33
28	52	9.136303	10.863697	9.140409	10.859591	10.004106	9.995894	8	32
29	15	9.136531	10.863469	9.140642	10.859358	10.004111	9.995889	45	31
30	30	9.136760	10.863240	9.140875	10.859125	10.004115	9.995885	30	30
31	45	9.136988	10.863012	9.141107	10.858893	10.004120	9.995880	15	29
32	53	9.137216	10.862784	9.141340	10.858660	10.004124	9.995876	7	28
33	15	9.137444	10.862556	9.141572	10.858428	10.004128	9.995872	45	27
34	30	9.137672	10.862328	9.141805	10.858195	10.004133	9.995867	30	26
35	45	9.137900	10.862100	9.142037	10.857963	10.004137	9.995863	15	25
36	54	9.138127	10.861873	9.142269	10.857731	10.004141	9.995859	6	24
37	15	9.138355	10.861645	9.142501	10.857499	10.004146	9.995854	45	23
38	30	9.138582	10.861418	9.142733	10.857267	10.004150	9.995850	30	22
39	45	9.138810	10.861190	9.142964	10.857036	10.004155	9.995846	15	21
40	55	9.139037	10.860963	9.143196	10.856804	10.004159	9.995841	5	20
41	15	9.139264	10.860736	9.143427	10.856573	10.004163	9.995837	45	19
42	30	9.139491	10.860509	9.143659	10.856341	10.004168	9.995832	30	18
43	45	9.139718	10.860282	9.143890	10.856110	10.004172	9.995828	15	17
44	56	9.139944	10.860056	9.144121	10.855879	10.004177	9.995823	4	16
45	15	9.140171	10.859829	9.144352	10.855648	10.004181	9.995819	45	15
46	30	9.140397	10.859603	9.144583	10.855417	10.004185	9.995815	30	14
47	45	9.140624	10.859376	9.144814	10.855186	10.004190	9.995810	15	13
48	57	9.140850	10.859150	9.145044	10.854956	10.004194	9.995806	3	12
49	15	9.141076	10.858924	9.145275	10.854725	10.004199	9.995801	45	11
50	30	9.141302	10.858698	9.145505	10.854495	10.004203	9.995797	30	10
51	45	9.141528	10.858472	9.145735	10.854265	10.004207	9.995793	15	9
52	58	9.141754	10.858246	9.145965	10.854035	10.004212	9.995788	2	8
53	15	9.141979	10.858021	9.146195	10.853805	10.004216	9.995784	45	7
54	30	9.142205	10.857795	9.146425	10.853575	10.004221	9.995779	30	6
55	45	9.142430	10.857570	9.146655	10.853345	10.004225	9.995775	15	5
56	59	9.142655	10.857345	9.146885	10.853115	10.004230	9.995770	1	4
57	15	9.142881	10.857119	9.147114	10.852886	10.004234	9.995766	45	3
58	30	9.143106	10.856894	9.147344	10.852656	10.004238	9.995762	30	2
59	45	9.143330	10.856670	9.147573	10.852427	10.004243	9.995757	15	1
60	60	9.143555	10.856445	9.147802	10.852198	10.004247	9.995753	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 28'		LOG. SINES, &c.						82 deg.	

0° 32'		LOG. SINES, &c. (t.)						8 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.143555	10.856445	9.147802	10.852198	10.004247	9.995753	60	60
1	15	9.143780	10.856220	9.148032	10.851968	10.004252	9.995748	45	59
2	30	9.144004	10.855996	9.148261	10.851739	10.004256	9.995744	30	58
3	45	9.144229	10.855771	9.148489	10.851511	10.004261	9.995739	15	57
4	1	9.144453	10.855547	9.148718	10.851282	10.004265	9.995735	59	56
5	15	9.144677	10.855323	9.148947	10.851053	10.004269	9.995731	45	55
6	30	9.144901	10.855099	9.149175	10.850825	10.004274	9.995726	30	54
7	45	9.145125	10.854875	9.149404	10.850596	10.004278	9.995722	15	53
8	2	9.145349	10.854651	9.149632	10.850368	10.004283	9.995717	58	52
9	15	9.145573	10.854427	9.149860	10.850140	10.004287	9.995713	45	51
10	30	9.145797	10.854203	9.150088	10.849912	10.004292	9.995708	30	50
11	45	9.146020	10.853980	9.150316	10.849684	10.004296	9.995704	15	49
12	3	9.146243	10.853757	9.150544	10.849456	10.004301	9.995699	57	48
13	15	9.146467	10.853533	9.150772	10.849228	10.004305	9.995695	45	47
14	30	9.146690	10.853310	9.150999	10.849001	10.004310	9.995690	30	46
15	45	9.146913	10.853087	9.151227	10.848773	10.004314	9.995686	15	45
16	4	9.147136	10.852864	9.151454	10.848546	10.004319	9.995681	56	44
17	15	9.147359	10.852641	9.151682	10.848318	10.004323	9.995677	45	43
18	30	9.147581	10.852419	9.151909	10.848091	10.004328	9.995672	30	42
19	45	9.147804	10.852196	9.152136	10.847864	10.004332	9.995668	15	41
20	5	9.148026	10.851974	9.152363	10.847637	10.004337	9.995663	55	40
21	15	9.148248	10.851752	9.152589	10.847411	10.004341	9.995659	45	39
22	30	9.148471	10.851529	9.152816	10.847184	10.004345	9.995655	30	38
23	45	9.148693	10.851307	9.153043	10.846957	10.004350	9.995650	15	37
24	6	9.148915	10.851085	9.153269	10.846731	10.004354	9.995646	54	36
25	15	9.149137	10.850863	9.153496	10.846504	10.004359	9.995641	45	35
26	30	9.149358	10.850642	9.153722	10.846278	10.004363	9.995637	30	34
27	45	9.149580	10.850420	9.153948	10.846052	10.004368	9.995632	15	33
28	7	9.149801	10.850199	9.154174	10.845826	10.004372	9.995628	53	32
29	15	9.150023	10.849977	9.154400	10.845600	10.004377	9.995623	45	31
30	30	9.150244	10.849756	9.154626	10.845374	10.004381	9.995619	30	30
31	45	9.150465	10.849535	9.154851	10.845149	10.004386	9.995614	15	29
32	8	9.150686	10.849314	9.155077	10.844923	10.004391	9.995609	52	28
33	15	9.150907	10.849093	9.155302	10.844698	10.004395	9.995605	45	27
34	30	9.151128	10.848872	9.155528	10.844472	10.004400	9.995600	30	26
35	45	9.151349	10.848651	9.155753	10.844247	10.004404	9.995596	15	25
36	9	9.151569	10.848431	9.155978	10.844022	10.004409	9.995591	51	24
37	15	9.151790	10.848210	9.156203	10.843797	10.004413	9.995587	45	23
38	30	9.152010	10.847990	9.156428	10.843572	10.004418	9.995582	30	22
39	45	9.152230	10.847770	9.156653	10.843347	10.004422	9.995578	15	21
40	10	9.152451	10.847549	9.156877	10.843123	10.004427	9.995573	50	20
41	15	9.152671	10.847329	9.157102	10.842898	10.004431	9.995569	45	19
42	30	9.152891	10.847109	9.157326	10.842674	10.004436	9.995564	30	18
43	45	9.153110	10.846890	9.157551	10.842449	10.004440	9.995560	15	17
44	11	9.153330	10.846670	9.157775	10.842225	10.004445	9.995555	49	16
45	15	9.153550	10.846450	9.157999	10.842001	10.004449	9.995551	45	15
46	30	9.153769	10.846231	9.158223	10.841777	10.004454	9.995546	30	14
47	45	9.153988	10.846012	9.158447	10.841553	10.004458	9.995542	15	13
48	12	9.154208	10.845792	9.158671	10.841329	10.004463	9.995537	48	12
49	15	9.154427	10.845573	9.158894	10.841106	10.004468	9.995532	45	11
50	30	9.154646	10.845354	9.159118	10.840882	10.004472	9.995528	30	10
51	45	9.154865	10.845135	9.159341	10.840659	10.004477	9.995523	15	9
52	13	9.155083	10.844917	9.159565	10.840435	10.004481	9.995519	47	8
53	15	9.155302	10.844693	9.159788	10.840212	10.004486	9.995514	45	7
54	30	9.155521	10.844479	9.160011	10.839989	10.004490	9.995510	30	6
55	45	9.155739	10.844261	9.160234	10.839766	10.004495	9.995505	15	5
56	14	9.155957	10.844043	9.160457	10.839543	10.004500	9.995500	46	4
57	15	9.156176	10.843824	9.160680	10.839320	10.004504	9.995496	45	3
58	30	9.156394	10.843606	9.160902	10.839098	10.004509	9.995491	30	2
59	45	9.156612	10.843388	9.161125	10.838875	10.004513	9.995487	15	1
60	15	9.156830	10.843170	9.161347	10.838653	10.004518	9.995482	45	0
min.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 27'		LOG. SINES, &c.						81 deg.	

0° 33'		LOG. SINES, &c. (t.)						8 deg.	
sec.	min.	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	min.	sec.
0	15	9.156830	10.843170	9.161347	10.838653	10.004518	9.995482	45	60
1	15	9.157047	10.842953	9.161570	10.838430	10.004522	9.995478	45	59
2	30	9.157265	10.842735	9.161792	10.838208	10.004527	9.995473	30	58
3	45	9.157482	10.842518	9.162014	10.837986	10.004532	9.995468	15	57
4	16	9.157700	10.842300	9.162236	10.837764	10.004536	9.995464	44	56
5	15	9.157917	10.842083	9.162458	10.837542	10.004541	9.995459	45	55
6	30	9.158134	10.841866	9.162680	10.837320	10.004545	9.995455	30	54
7	45	9.158352	10.841648	9.162901	10.837099	10.004550	9.995450	15	53
8	17	9.158569	10.841431	9.163123	10.836877	10.004555	9.995445	43	52
9	15	9.158785	10.841215	9.163344	10.836656	10.004559	9.995441	45	51
10	30	9.159002	10.840998	9.163566	10.836434	10.004564	9.995436	30	50
11	45	9.159219	10.840781	9.163787	10.836213	10.004568	9.995432	15	49
12	18	9.159435	10.840565	9.164008	10.835992	10.004573	9.995427	42	48
13	15	9.159652	10.840348	9.164229	10.835771	10.004578	9.995422	45	47
14	30	9.159868	10.840132	9.164450	10.835550	10.004582	9.995418	30	46
15	45	9.160084	10.839916	9.164671	10.835329	10.004587	9.995413	15	45
16	19	9.160300	10.839700	9.164892	10.835108	10.004591	9.995409	41	44
17	15	9.160516	10.839484	9.165112	10.834888	10.004596	9.995404	45	43
18	30	9.160732	10.839268	9.165333	10.834667	10.004601	9.995399	30	42
19	45	9.160948	10.839052	9.165553	10.834447	10.004605	9.995395	15	41
20	20	9.161164	10.838836	9.165774	10.834226	10.004610	9.995390	40	40
21	15	9.161379	10.838621	9.165994	10.834006	10.004614	9.995386	45	39
22	30	9.161595	10.838405	9.166214	10.833786	10.004619	9.995381	30	38
23	45	9.161810	10.838190	9.166434	10.833566	10.004624	9.995376	15	37
24	21	9.162025	10.837975	9.166654	10.833346	10.004628	9.995372	39	36
25	15	9.162241	10.837759	9.166873	10.833127	10.004633	9.995367	45	35
26	30	9.162456	10.837544	9.167093	10.832907	10.004638	9.995362	30	34
27	45	9.162670	10.837330	9.167313	10.832687	10.004642	9.995358	15	33
28	22	9.162885	10.837115	9.167532	10.832468	10.004647	9.995353	38	32
29	15	9.163100	10.836900	9.167751	10.832249	10.004652	9.995348	45	31
30	30	9.163315	10.836685	9.167971	10.832029	10.004656	9.995344	30	30
31	45	9.163529	10.836471	9.168190	10.831810	10.004661	9.995339	15	29
32	23	9.163743	10.836257	9.168409	10.831591	10.004666	9.995334	37	28
33	15	9.163958	10.836042	9.168628	10.831372	10.004670	9.995330	45	27
34	30	9.164172	10.835828	9.168847	10.831153	10.004675	9.995325	30	26
35	45	9.164386	10.835614	9.169065	10.830935	10.004680	9.995320	15	25
36	24	9.164600	10.835400	9.169284	10.830716	10.004684	9.995316	36	24
37	15	9.164814	10.835186	9.169502	10.830498	10.004689	9.995311	45	23
38	30	9.165027	10.834973	9.169721	10.830279	10.004694	9.995306	30	22
39	45	9.165241	10.834759	9.169939	10.830061	10.004698	9.995302	15	21
40	25	9.165454	10.834546	9.170157	10.829843	10.004703	9.995297	35	20
41	15	9.165668	10.834332	9.170375	10.829625	10.004708	9.995292	45	19
42	30	9.165881	10.834119	9.170593	10.829407	10.004712	9.995288	30	18
43	45	9.166094	10.833906	9.170811	10.829189	10.004717	9.995283	15	17
44	26	9.166307	10.833693	9.171029	10.828971	10.004722	9.995278	34	16
45	15	9.166520	10.833480	9.171246	10.828754	10.004726	9.995274	45	15
46	30	9.166733	10.833267	9.171464	10.828536	10.004731	9.995269	30	14
47	45	9.166946	10.833054	9.171681	10.828319	10.004736	9.995264	15	13
48	27	9.167159	10.832841	9.171899	10.828101	10.004740	9.995260	33	12
49	15	9.167371	10.832629	9.172116	10.827884	10.004745	9.995255	45	11
50	30	9.167584	10.832416	9.172333	10.827667	10.004750	9.995250	30	10
51	45	9.167796	10.832204	9.172550	10.827450	10.004754	9.995246	15	9
52	28	9.168008	10.831992	9.172767	10.827233	10.004759	9.995241	32	8
53	15	9.168220	10.831780	9.172984	10.827016	10.004764	9.995236	45	7
54	30	9.168432	10.831568	9.173201	10.826799	10.004769	9.995231	30	6
55	45	9.168644	10.831356	9.173417	10.826583	10.004773	9.995227	15	5
56	29	9.168856	10.831144	9.173634	10.826366	10.004778	9.995222	31	4
57	15	9.169068	10.830932	9.173850	10.826150	10.004783	9.995217	45	3
58	30	9.169279	10.830721	9.174066	10.825934	10.004787	9.995213	30	2
59	45	9.169491	10.830509	9.174283	10.825717	10.004792	9.995208	15	1
60	30	9.169702	10.830298	9.174499	10.825501	10.004797	9.995203	30	0
sec.	min.	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	min.	sec.
0° 26'		LOG. SINES, &c.						51 deg.	

0° 34'.		LOG. SINES, &c. (t.)					8 deg.	
	min.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
30	9.169702	10.830298	9.174499	10.825501	10.004797	9.995203	30	60
15	9.169913	10.830087	9.174715	10.825285	10.004802	9.995198	45	59
30	9.170124	10.829876	9.174931	10.825069	10.004806	9.995194	30	58
45	9.170336	10.829664	9.175146	10.824854	10.004811	9.995189	15	57
31	9.170546	10.829454	9.175362	10.824638	10.004816	9.995184	29	56
15	9.170757	10.829243	9.175578	10.824422	10.004820	9.995180	45	55
30	9.170968	10.829032	9.175793	10.824207	10.004825	9.995175	30	54
45	9.171179	10.828821	9.176009	10.823991	10.004830	9.995170	15	53
32	9.171389	10.828611	9.176224	10.823776	10.004835	9.995165	28	52
15	9.171600	10.828400	9.176439	10.823561	10.004839	9.995161	45	51
30	9.171810	10.828190	9.176654	10.823346	10.004844	9.995156	30	50
45	9.172020	10.827980	9.176869	10.823131	10.004849	9.995151	15	49
33	9.172230	10.827770	9.177084	10.822916	10.004854	9.995146	27	48
15	9.172440	10.827560	9.177299	10.822701	10.004858	9.995142	45	47
30	9.172650	10.827350	9.177513	10.822487	10.004863	9.995137	30	46
45	9.172860	10.827140	9.177728	10.822272	10.004868	9.995132	15	45
34	9.173070	10.826930	9.177942	10.822058	10.004873	9.995127	26	44
15	9.173279	10.826721	9.178157	10.821843	10.004877	9.995123	45	43
30	9.173489	10.826511	9.178371	10.821629	10.004882	9.995118	30	42
45	9.173698	10.826302	9.178585	10.821415	10.004887	9.995113	15	41
35	9.173908	10.826092	9.178799	10.821201	10.004892	9.995108	25	40
15	9.174117	10.825883	9.179013	10.820987	10.004896	9.995104	45	39
30	9.174326	10.825674	9.179227	10.820773	10.004901	9.995099	30	38
45	9.174535	10.825465	9.179441	10.820559	10.004906	9.995094	15	37
36	9.174744	10.825256	9.179655	10.820345	10.004911	9.995089	24	36
15	9.174953	10.825047	9.179868	10.820132	10.004916	9.995084	45	35
30	9.175161	10.824839	9.180082	10.819918	10.004920	9.995080	30	34
45	9.175370	10.824630	9.180295	10.819705	10.004925	9.995075	15	33
37	9.175578	10.824422	9.180508	10.819492	10.004930	9.995070	23	32
15	9.175787	10.824213	9.180721	10.819279	10.004935	9.995065	45	31
30	9.175995	10.824005	9.180934	10.819066	10.004939	9.995061	30	30
45	9.176203	10.823797	9.181147	10.818853	10.004944	9.995056	15	29
38	9.176411	10.823589	9.181360	10.818640	10.004949	9.995051	22	28
15	9.176619	10.823381	9.181573	10.818427	10.004954	9.995046	45	27
30	9.176827	10.823173	9.181786	10.818214	10.004959	9.995041	30	26
45	9.177035	10.822965	9.181998	10.818002	10.004963	9.995037	15	25
39	9.177242	10.822758	9.182211	10.817789	10.004968	9.995032	21	24
15	9.177450	10.822550	9.182423	10.817577	10.004973	9.995027	45	23
30	9.177657	10.822343	9.182635	10.817365	10.004978	9.995022	30	22
45	9.177865	10.822135	9.182847	10.817153	10.004983	9.995017	15	21
40	9.178072	10.821928	9.183059	10.816941	10.004987	9.995013	20	20
15	9.178279	10.821721	9.183271	10.816729	10.004992	9.995008	45	19
30	9.178486	10.821514	9.183483	10.816517	10.004997	9.995003	30	18
45	9.178693	10.821307	9.183695	10.816305	10.005002	9.994998	15	17
41	9.178900	10.821100	9.183907	10.816093	10.005007	9.994993	19	16
15	9.179107	10.820893	9.184118	10.815882	10.005012	9.994988	45	15
30	9.179313	10.820687	9.184330	10.815670	10.005016	9.994984	30	14
45	9.179520	10.820480	9.184541	10.815459	10.005021	9.994979	15	13
42	9.179726	10.820274	9.184752	10.815248	10.005026	9.994974	18	12
15	9.179933	10.820067	9.184964	10.815036	10.005031	9.994969	45	11
30	9.180139	10.819861	9.185175	10.814825	10.005036	9.994964	30	10
45	9.180345	10.819655	9.185386	10.814614	10.005041	9.994959	15	9
43	9.180551	10.819449	9.185597	10.814403	10.005045	9.994955	17	8
15	9.180757	10.819243	9.185807	10.814193	10.005050	9.994950	45	7
30	9.180963	10.819037	9.186018	10.813982	10.005055	9.994945	30	6
45	9.181169	10.818831	9.186229	10.813771	10.005060	9.994940	15	5
44	9.181374	10.818626	9.186439	10.813561	10.005065	9.994935	16	4
15	9.181580	10.818420	9.186649	10.813351	10.005070	9.994930	45	3
30	9.181785	10.818215	9.186860	10.813140	10.005075	9.994925	30	2
45	9.181991	10.818009	9.187070	10.812930	10.005079	9.994921	15	1
45	9.182196	10.817804	9.187280	10.812720	10.005084	9.994916	15	0
	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 25'.		LOG. SINES, &c.					81 deg.	

0° 35'			LOG. SINES, &c. (L.)						8 deg.		
sec.	"	"	sine.	cosecant.	tangent.	cotangent.	secant.	cos. se.	"	"	sec.
0	45		9.182196	10.817804	9.187280	10.812720	10.005084	9.994916	15		60
1		15	9.182401	10.817599	9.187490	10.812510	10.005089	9.994911	45		59
2		30	9.182606	10.817394	9.187700	10.812300	10.005094	9.994906	30		58
3		45	9.182811	10.817189	9.187910	10.812090	10.005099	9.994901	15		57
4	46		9.183016	10.816984	9.188120	10.811880	10.005104	9.994896	14		56
5		15	9.183221	10.816779	9.188329	10.811671	10.005109	9.994891	45		55
6		30	9.183425	10.816575	9.188539	10.811461	10.005113	9.994887	30		54
7		45	9.183630	10.816370	9.188748	10.811252	10.005118	9.994882	15		53
8	47		9.183834	10.816166	9.188957	10.811043	10.005123	9.994877	13		52
9		15	9.184039	10.815961	9.189167	10.810833	10.005128	9.994872	45		51
10		30	9.184243	10.815757	9.189376	10.810624	10.005133	9.994867	30		50
11		45	9.184447	10.815553	9.189585	10.810415	10.005138	9.994862	15		49
12	48		9.184651	10.815349	9.189794	10.810206	10.005143	9.994857	12		48
13		15	9.184855	10.815145	9.190003	10.809997	10.005148	9.994852	45		47
14		30	9.185059	10.814941	9.190211	10.809789	10.005153	9.994847	30		46
15		45	9.185263	10.814737	9.190420	10.809580	10.005157	9.994842	15		45
16	49		9.185466	10.814534	9.190629	10.809371	10.005162	9.994838	11		44
17		15	9.185670	10.814330	9.190837	10.809163	10.005167	9.994833	45		43
18		30	9.185873	10.814127	9.191046	10.808954	10.005172	9.994828	30		42
19		45	9.186077	10.813923	9.191254	10.808746	10.005177	9.994823	15		41
20	50		9.186280	10.813720	9.191462	10.808538	10.005182	9.994818	10		40
21		15	9.186483	10.813517	9.191670	10.808330	10.005187	9.994813	45		39
22		30	9.186686	10.813314	9.191878	10.808122	10.005192	9.994808	30		38
23		45	9.186889	10.813111	9.192086	10.807914	10.005197	9.994803	15		37
24	51		9.187092	10.812908	9.192294	10.807706	10.005202	9.994798	9		36
25		15	9.187295	10.812705	9.192502	10.807498	10.005206	9.994794	45		35
26		30	9.187498	10.812502	9.192709	10.807291	10.005211	9.994789	30		34
27		45	9.187700	10.812300	9.192917	10.807083	10.005216	9.994784	15		33
28	52		9.187903	10.812097	9.193124	10.806876	10.005221	9.994779	8		32
29		15	9.188105	10.811895	9.193331	10.806669	10.005226	9.994774	45		31
30		30	9.188308	10.811692	9.193539	10.806461	10.005231	9.994769	30		30
31		45	9.188510	10.811490	9.193746	10.806254	10.005236	9.994764	15		29
32	53		9.188712	10.811288	9.193953	10.806047	10.005241	9.994759	7		28
33		15	9.188914	10.811086	9.194160	10.805840	10.005246	9.994754	45		27
34		30	9.189116	10.810884	9.194367	10.805633	10.005251	9.994749	30		26
35		45	9.189318	10.810682	9.194573	10.805427	10.005256	9.994744	15		25
36	54		9.189519	10.810481	9.194780	10.805220	10.005261	9.994739	6		24
37		15	9.189721	10.810279	9.194987	10.805013	10.005266	9.994734	45		23
38		30	9.189923	10.810077	9.195193	10.804807	10.005271	9.994729	30		22
39		45	9.190124	10.809876	9.195400	10.804600	10.005276	9.994724	15		21
40	55		9.190325	10.809675	9.195606	10.804394	10.005281	9.994719	5		20
41		15	9.190527	10.809473	9.195812	10.804188	10.005286	9.994714	45		19
42		30	9.190728	10.809272	9.196018	10.803982	10.005290	9.994710	30		18
43		45	9.190929	10.809071	9.196224	10.803776	10.005295	9.994705	15		17
44	56		9.191130	10.808870	9.196430	10.803570	10.005300	9.994700	4		16
45		15	9.191331	10.808669	9.196636	10.803364	10.005305	9.994695	45		15
46		30	9.191531	10.808469	9.196842	10.803158	10.005310	9.994690	30		14
47		45	9.191732	10.808268	9.197047	10.802953	10.005315	9.994685	15		13
48	57		9.191933	10.808067	9.197253	10.802747	10.005320	9.994680	3		12
49		15	9.192133	10.807867	9.197458	10.802542	10.005325	9.994675	45		11
50		30	9.192334	10.807666	9.197664	10.802336	10.005330	9.994670	30		10
51		45	9.192534	10.807466	9.197869	10.802131	10.005335	9.994665	15		9
52	58		9.192734	10.807266	9.198074	10.801926	10.005340	9.994660	2		8
53		15	9.192934	10.807066	9.198279	10.801721	10.005345	9.994655	45		7
54		30	9.193134	10.806866	9.198484	10.801516	10.005350	9.994650	30		6
55		45	9.193334	10.806666	9.198689	10.801311	10.005355	9.994645	15		5
56	59		9.193534	10.806466	9.198894	10.801106	10.005360	9.994640	1		4
57		15	9.193734	10.806266	9.199099	10.800901	10.005365	9.994635	45		3
58		30	9.193933	10.806067	9.199303	10.800697	10.005370	9.994630	30		2
59		45	9.194133	10.805867	9.199508	10.800492	10.005375	9.994625	15		1
60	60		9.194332	10.805668	9.199712	10.800288	10.005380	9.994620	0		0
sec.	"	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"	sec.
5° 24'			LOG. SINES, &c.						81 deg.		

0° 36"		LOG. SINES, &c. (t.)					9 deg.	
	mins.	cosecant.	tangent.	cotangent.	secant.	cosine.		sec.
0	9.194332	10.805668	9.199712	10.800288	10.005380	9.994620	60	60
15	9.194532	10.805468	9.199917	10.800083	10.005385	9.994615	45	59
30	9.194731	10.805269	9.200121	10.799879	10.005390	9.994610	30	58
45	9.194930	10.805070	9.200325	10.799675	10.005395	9.994605	15	57
1	9.195129	10.804871	9.200529	10.799471	10.005400	9.994600	59	56
15	9.195328	10.804672	9.200733	10.799267	10.005405	9.994595	45	55
30	9.195527	10.804473	9.200937	10.799063	10.005410	9.994590	30	54
45	9.195726	10.804274	9.201141	10.798859	10.005415	9.994585	15	53
2	9.195925	10.804075	9.201345	10.798655	10.005420	9.994580	58	52
15	9.196123	10.803877	9.201548	10.798452	10.005425	9.994575	45	51
30	9.196322	10.803678	9.201752	10.798248	10.005430	9.994570	30	50
45	9.196520	10.803480	9.201955	10.798045	10.005435	9.994565	15	49
3	9.196719	10.803281	9.202159	10.797841	10.005440	9.994560	57	48
15	9.196917	10.803083	9.202362	10.797638	10.005445	9.994555	45	47
30	9.197115	10.802885	9.202565	10.797435	10.005450	9.994550	30	46
45	9.197313	10.802687	9.202768	10.797232	10.005455	9.994545	15	45
4	9.197511	10.802489	9.202971	10.797029	10.005460	9.994540	56	44
15	9.197709	10.802291	9.203174	10.796826	10.005466	9.994534	45	43
30	9.197907	10.802093	9.203377	10.796623	10.005471	9.994529	30	42
45	9.198104	10.801896	9.203580	10.796420	10.005476	9.994524	15	41
5	9.198302	10.801698	9.203782	10.796218	10.005481	9.994519	55	40
15	9.198499	10.801501	9.203985	10.796015	10.005486	9.994514	45	39
30	9.198697	10.801303	9.204187	10.795813	10.005491	9.994509	30	38
45	9.198894	10.801106	9.204390	10.795610	10.005496	9.994504	15	37
6	9.199091	10.800909	9.204592	10.795408	10.005501	9.994499	54	36
15	9.199288	10.800712	9.204794	10.795206	10.005506	9.994494	45	35
30	9.199485	10.800515	9.204996	10.795004	10.005511	9.994489	30	34
45	9.199682	10.800318	9.205198	10.794802	10.005516	9.994484	15	33
7	9.199879	10.800121	9.205400	10.794600	10.005521	9.994479	53	32
15	9.200076	10.799924	9.205602	10.794398	10.005526	9.994474	45	31
30	9.200273	10.799727	9.205804	10.794196	10.005531	9.994469	30	30
45	9.200469	10.799531	9.206006	10.793994	10.005536	9.994464	15	29
8	9.200666	10.799334	9.206207	10.793793	10.005541	9.994459	52	28
15	9.200862	10.799138	9.206409	10.793591	10.005546	9.994454	45	27
30	9.201059	10.798941	9.206610	10.793390	10.005552	9.994448	30	26
45	9.201255	10.798745	9.206811	10.793189	10.005557	9.994443	15	25
9	9.201451	10.798549	9.207013	10.792987	10.005562	9.994438	51	24
15	9.201647	10.798353	9.207214	10.792786	10.005567	9.994433	45	23
30	9.201843	10.798157	9.207415	10.792585	10.005572	9.994428	30	22
45	9.202039	10.797961	9.207616	10.792384	10.005577	9.994423	15	21
10	9.202234	10.797766	9.207816	10.792184	10.005582	9.994418	50	20
15	9.202430	10.797570	9.208017	10.791983	10.005587	9.994413	45	19
30	9.202626	10.797374	9.208218	10.791782	10.005592	9.994408	30	18
45	9.202821	10.797179	9.208419	10.791581	10.005597	9.994403	15	17
11	9.203017	10.796983	9.208619	10.791381	10.005603	9.994397	49	16
15	9.203212	10.796788	9.208819	10.791181	10.005608	9.994392	45	15
30	9.203407	10.796593	9.209020	10.790980	10.005613	9.994387	30	14
45	9.203602	10.796398	9.209220	10.790780	10.005618	9.994382	15	13
12	9.203797	10.796203	9.209420	10.790580	10.005623	9.994377	48	12
15	9.203992	10.796008	9.209620	10.790380	10.005628	9.994372	45	11
30	9.204187	10.795813	9.209820	10.790180	10.005633	9.994367	30	10
45	9.204382	10.795618	9.210020	10.789980	10.005638	9.994362	15	9
13	9.204577	10.795423	9.210220	10.789780	10.005643	9.994357	47	8
15	9.204771	10.795229	9.210420	10.789580	10.005649	9.994351	45	7
30	9.204966	10.795034	9.210619	10.789381	10.005654	9.994346	30	6
45	9.205160	10.794840	9.210819	10.789181	10.005659	9.994341	15	5
14	9.205354	10.794646	9.211018	10.788982	10.005664	9.994336	46	4
15	9.205549	10.794451	9.211218	10.788782	10.005669	9.994331	45	3
30	9.205743	10.794257	9.211417	10.788583	10.005674	9.994326	30	2
45	9.205937	10.794063	9.211616	10.788384	10.005679	9.994321	15	1
15	9.206131	10.793869	9.211815	10.788185	10.005684	9.994316	45	0
	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
5° 23"		LOG. SINES, &c.					80 deg.	

0° 37'		LOG. SINES, &c. (t)						9 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	"	"
0	15	9.206131	10.793869	9.211515	10.785185	10.005684	9.994316		45
1	15	9.206325	10.793675	9.212014	10.787986	10.005690	9.994310		45
2	30	9.206519	10.793481	9.212213	10.787787	10.005695	9.994305		30
3	45	9.206712	10.793288	9.212412	10.787588	10.005700	9.994300		15
4	16	9.206906	10.793094	9.212611	10.787389	10.005705	9.994295		44
5	15	9.207099	10.792901	9.212810	10.787190	10.005710	9.994290		45
6	30	9.207293	10.792707	9.213008	10.786992	10.005715	9.994285		30
7	45	9.207486	10.792514	9.213207	10.786793	10.005721	9.994279		15
8	17	9.207679	10.792321	9.213405	10.786595	10.005726	9.994274		43
9	15	9.207873	10.792127	9.213603	10.786397	10.005731	9.994269		45
10	30	9.208066	10.791934	9.213802	10.786198	10.005736	9.994264		30
11	45	9.208259	10.791741	9.214000	10.786000	10.005741	9.994259		15
12	18	9.208452	10.791548	9.214198	10.785802	10.005746	9.994254		42
13	15	9.208644	10.791355	9.214396	10.785604	10.005752	9.994248		45
14	30	9.208837	10.791163	9.214594	10.785406	10.005757	9.994243		30
15	45	9.209030	10.790970	9.214792	10.785208	10.005762	9.994238		15
16	19	9.209222	10.790778	9.214989	10.785011	10.005767	9.994233		41
17	15	9.209415	10.790585	9.215187	10.784813	10.005772	9.994228		45
18	30	9.209607	10.790393	9.215385	10.784615	10.005777	9.994223		30
19	45	9.209799	10.790201	9.215582	10.784418	10.005783	9.994217		15
20	20	9.209992	10.790008	9.215779	10.784221	10.005788	9.994212		40
21	15	9.210184	10.789816	9.215977	10.784023	10.005793	9.994207		45
22	30	9.210376	10.789624	9.216174	10.783826	10.005798	9.994202		30
23	45	9.210568	10.789432	9.216371	10.783629	10.005803	9.994197		15
24	21	9.210760	10.789240	9.216568	10.783432	10.005809	9.994191		39
25	15	9.210951	10.789049	9.216765	10.783235	10.005814	9.994186		45
26	30	9.211143	10.788857	9.216962	10.783038	10.005819	9.994181		30
27	45	9.211335	10.788665	9.217159	10.782841	10.005824	9.994176		15
28	22	9.211526	10.788474	9.217356	10.782644	10.005829	9.994171		38
29	15	9.211718	10.788282	9.217552	10.782448	10.005835	9.994165		45
30	30	9.211909	10.788091	9.217749	10.782251	10.005840	9.994160		30
31	45	9.212100	10.787900	9.217945	10.782055	10.005845	9.994155		15
32	23	9.212291	10.787709	9.218142	10.781858	10.005850	9.994150		37
33	15	9.212482	10.787518	9.218338	10.781662	10.005856	9.994144		45
34	30	9.212673	10.787327	9.218534	10.781466	10.005861	9.994139		30
35	45	9.212864	10.787136	9.218730	10.781270	10.005866	9.994134		15
36	24	9.213055	10.786945	9.218926	10.781074	10.005871	9.994129		36
37	15	9.213246	10.786754	9.219122	10.780878	10.005876	9.994124		45
38	30	9.213437	10.786563	9.219318	10.780682	10.005882	9.994118		30
39	45	9.213627	10.786373	9.219514	10.780486	10.005887	9.994113		15
40	25	9.213818	10.786182	9.219710	10.780290	10.005892	9.994108		35
41	15	9.214008	10.785992	9.219905	10.780095	10.005897	9.994103		45
42	30	9.214198	10.785802	9.220101	10.779899	10.005903	9.994097		30
43	45	9.214389	10.785611	9.220296	10.779704	10.005908	9.994092		15
44	26	9.214579	10.785421	9.220492	10.779508	10.005913	9.994087		34
45	15	9.214769	10.785231	9.220687	10.779313	10.005918	9.994082		45
46	30	9.214959	10.785041	9.220882	10.779118	10.005924	9.994076		30
47	45	9.215149	10.784851	9.221077	10.778923	10.005929	9.994071		15
48	27	9.215338	10.784662	9.221272	10.778728	10.005934	9.994066		33
49	15	9.215528	10.784472	9.221467	10.778533	10.005939	9.994061		45
50	30	9.215718	10.784282	9.221662	10.778338	10.005945	9.994055		30
51	45	9.215907	10.784093	9.221857	10.778143	10.005950	9.994050		15
52	28	9.216097	10.783903	9.222052	10.777948	10.005955	9.994045		32
53	15	9.216286	10.783714	9.222246	10.777754	10.005960	9.994040		45
54	30	9.216475	10.783525	9.222441	10.777559	10.005966	9.994034		30
55	45	9.216664	10.783336	9.222635	10.777365	10.005971	9.994029		15
56	29	9.216854	10.783146	9.222830	10.777170	10.005976	9.994024		31
57	15	9.217043	10.782957	9.223024	10.776976	10.005982	9.994018		45
58	30	9.217232	10.782768	9.223218	10.776782	10.005987	9.994013		30
59	45	9.217420	10.782580	9.223412	10.776588	10.005992	9.994008		15
60	30	9.217609	10.782391	9.223606	10.776394	10.005997	9.994003		30
sec.	"	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	"	"
5° 22'		LOG. SINES, &c.						80 deg.	

0° 38'		LOG. SINES, &c. (t.)						9 deg	
sec.	'	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	'	sec.
0	30	9.217609	10.782391	9.223606	10.776394	10.005997	9.994003	30	60
1	15	9.217798	10.782202	9.223800	10.776200	10.006003	9.993997	45	59
2	30	9.217986	10.782014	9.223994	10.776006	10.006008	9.993992	30	58
3	45	9.218175	10.781825	9.224188	10.775812	10.006013	9.993987	15	57
4	31	9.218363	10.781637	9.224382	10.775618	10.006019	9.993981	29	56
5	15	9.218552	10.781448	9.224576	10.775424	10.006024	9.993976	45	55
6	30	9.218740	10.781260	9.224769	10.775231	10.006029	9.993971	30	54
7	45	9.218928	10.781072	9.224963	10.775037	10.006034	9.993966	15	53
8	32	9.219116	10.780884	9.225156	10.774844	10.006040	9.993960	28	52
9	15	9.219304	10.780696	9.225349	10.774651	10.006045	9.993955	45	51
10	30	9.219492	10.780508	9.225543	10.774457	10.006050	9.993950	30	50
11	45	9.219680	10.780320	9.225736	10.774264	10.006056	9.993944	15	49
12	33	9.219868	10.780132	9.225929	10.774071	10.006061	9.993939	27	48
13	15	9.220056	10.779944	9.226122	10.773878	10.006066	9.993934	45	47
14	30	9.220243	10.779757	9.226315	10.773685	10.006072	9.993928	30	46
15	45	9.220431	10.779569	9.226508	10.773492	10.006077	9.993923	15	45
16	34	9.220618	10.779382	9.226700	10.773300	10.006082	9.993918	26	44
17	15	9.220805	10.779195	9.226893	10.773107	10.006088	9.993912	45	43
18	30	9.220993	10.779007	9.227086	10.772914	10.006093	9.993907	30	42
19	45	9.221180	10.778820	9.227278	10.772722	10.006098	9.993902	15	41
20	35	9.221367	10.778633	9.227471	10.772529	10.006104	9.993896	25	40
21	15	9.221554	10.778446	9.227663	10.772337	10.006109	9.993891	45	39
22	30	9.221741	10.778259	9.227855	10.772145	10.006114	9.993886	30	38
23	45	9.221928	10.778072	9.228047	10.771953	10.006120	9.993880	15	37
24	36	9.222115	10.777885	9.228239	10.771761	10.006125	9.993875	24	36
25	15	9.222301	10.777699	9.228431	10.771569	10.006130	9.993870	45	35
26	30	9.222488	10.777512	9.228623	10.771377	10.006136	9.993864	30	34
27	45	9.222674	10.777326	9.228815	10.771185	10.006141	9.993859	15	33
28	37	9.222861	10.777139	9.229007	10.770993	10.006146	9.993854	23	32
29	15	9.223047	10.776953	9.229199	10.770801	10.006152	9.993848	45	31
30	30	9.223234	10.776766	9.229390	10.770610	10.006157	9.993843	30	30
31	45	9.223420	10.776580	9.229582	10.770418	10.006162	9.993838	15	29
32	38	9.223606	10.776394	9.229773	10.770227	10.006168	9.993832	22	28
33	15	9.223792	10.776208	9.229965	10.770035	10.006173	9.993827	45	27
34	30	9.223978	10.776022	9.230156	10.769844	10.006178	9.993822	30	26
35	45	9.224164	10.775836	9.230347	10.769653	10.006184	9.993816	15	25
36	39	9.224349	10.775651	9.230539	10.769461	10.006189	9.993811	21	24
37	15	9.224535	10.775465	9.230730	10.769270	10.006195	9.993805	45	23
38	30	9.224721	10.775279	9.230921	10.769079	10.006200	9.993800	30	22
39	45	9.224906	10.775094	9.231112	10.768888	10.006205	9.993795	15	21
40	40	9.225092	10.774908	9.231302	10.768698	10.006211	9.993789	20	20
41	15	9.225277	10.774723	9.231493	10.768507	10.006216	9.993784	45	19
42	30	9.225462	10.774538	9.231684	10.768316	10.006221	9.993779	30	18
43	45	9.225648	10.774352	9.231874	10.768126	10.006227	9.993773	15	17
44	41	9.225833	10.774167	9.232065	10.767935	10.006232	9.993768	19	16
45	15	9.226018	10.773982	9.232255	10.767745	10.006238	9.993762	45	15
46	30	9.226203	10.773797	9.232446	10.767554	10.006243	9.993757	30	14
47	45	9.226388	10.773612	9.232636	10.767364	10.006248	9.993752	15	13
48	42	9.226572	10.773428	9.232826	10.767174	10.006254	9.993746	18	12
49	15	9.226757	10.773243	9.233016	10.766984	10.006259	9.993741	45	11
50	30	9.226942	10.773058	9.233206	10.766794	10.006265	9.993735	30	10
51	45	9.227126	10.772874	9.233396	10.766604	10.006270	9.993730	15	9
52	43	9.227311	10.772689	9.233586	10.766414	10.006275	9.993725	17	8
53	15	9.227495	10.772505	9.233776	10.766224	10.006281	9.993719	45	7
54	30	9.227680	10.772320	9.233966	10.766034	10.006286	9.993714	30	6
55	45	9.227864	10.772136	9.234155	10.765845	10.006292	9.993708	15	5
56	44	9.228048	10.771952	9.234345	10.765655	10.006297	9.993703	16	4
57	15	9.228232	10.771768	9.234535	10.765465	10.006302	9.993698	45	3
58	30	9.228416	10.771584	9.234724	10.765276	10.006308	9.993692	30	2
59	45	9.228600	10.771400	9.234913	10.765087	10.006313	9.993687	15	1
60	45	9.228784	10.771216	9.235103	10.764897	10.006319	9.993681	15	0
sec.	'	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	'	sec.
5° 21'		LOG. SINES, &c.						80 deg.	

0° 39'		LOG. SINES, &c. (t)						9 deg.	
sec.	'	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	'	sec.
0	45	9.228784	10.771216	9.235103	10.764897	10.006319	9.993681	15	60
1	15	9.228968	10.771032	9.235292	10.764708	10.006324	9.993676	45	59
2	30	9.229151	10.770849	9.235481	10.764519	10.006330	9.993670	30	58
3	45	9.229335	10.770665	9.235670	10.764330	10.006335	9.993665	15	57
4	46	9.229518	10.770482	9.235859	10.764141	10.006340	9.993660	14	56
5	15	9.229702	10.770298	9.236048	10.763952	10.006346	9.993654	45	55
6	30	9.229885	10.770115	9.236237	10.763763	10.006351	9.993649	30	54
7	45	9.230069	10.769931	9.236425	10.763575	10.006357	9.993643	15	53
8	47	9.230252	10.769748	9.236614	10.763386	10.006362	9.993638	13	52
9	15	9.230435	10.769565	9.236802	10.763198	10.006368	9.993632	45	51
10	30	9.230618	10.769382	9.236991	10.763009	10.006373	9.993627	30	50
11	45	9.230801	10.769199	9.237179	10.762821	10.006379	9.993621	15	49
12	48	9.230984	10.769016	9.237368	10.762632	10.006384	9.993616	12	48
13	15	9.231167	10.768833	9.237556	10.762444	10.006389	9.993611	45	47
14	30	9.231349	10.768651	9.237744	10.762256	10.006395	9.993605	30	46
15	45	9.231532	10.768468	9.237932	10.762068	10.006400	9.993600	15	45
16	49	9.231714	10.768286	9.238120	10.761880	10.006406	9.993594	11	44
17	15	9.231897	10.768103	9.238308	10.761692	10.006411	9.993589	45	43
18	30	9.232079	10.767921	9.238496	10.761504	10.006417	9.993583	30	42
19	45	9.232262	10.767738	9.238684	10.761316	10.006422	9.993578	15	41
20	50	9.232444	10.767556	9.238872	10.761128	10.006428	9.993572	10	40
21	15	9.232626	10.767374	9.239059	10.760941	10.006433	9.993567	45	39
22	30	9.232808	10.767192	9.239247	10.760753	10.006439	9.993561	30	38
23	45	9.232990	10.767010	9.239434	10.760566	10.006444	9.993556	15	37
24	51	9.233172	10.766828	9.239622	10.760378	10.006450	9.993550	9	36
25	15	9.233354	10.766646	9.239809	10.760191	10.006455	9.993545	45	35
26	30	9.233536	10.766464	9.239996	10.760004	10.006461	9.993539	30	34
27	45	9.233718	10.766282	9.240184	10.759816	10.006466	9.993534	15	33
28	52	9.233899	10.766101	9.240371	10.759629	10.006472	9.993528	8	32
29	15	9.234081	10.765919	9.240558	10.759442	10.006477	9.993523	45	31
30	30	9.234262	10.765738	9.240745	10.759255	10.006483	9.993517	30	30
31	45	9.234444	10.765556	9.240932	10.759068	10.006488	9.993512	15	29
32	53	9.234625	10.765375	9.241118	10.758882	10.006494	9.993506	7	28
33	15	9.234806	10.765194	9.241305	10.758695	10.006499	9.993501	45	27
34	30	9.234987	10.765013	9.241492	10.758508	10.006505	9.993495	30	26
35	45	9.235168	10.764832	9.241678	10.758322	10.006510	9.993490	15	25
36	54	9.235349	10.764651	9.241865	10.758135	10.006516	9.993484	6	24
37	15	9.235530	10.764470	9.242051	10.757949	10.006521	9.993479	45	23
38	30	9.235711	10.764289	9.242238	10.757762	10.006527	9.993473	30	22
39	45	9.235892	10.764108	9.242424	10.757576	10.006532	9.993468	15	21
40	55	9.236073	10.763927	9.242610	10.757390	10.006538	9.993462	5	20
41	15	9.236253	10.763747	9.242796	10.757204	10.006543	9.993457	45	19
42	30	9.236434	10.763566	9.242982	10.757018	10.006549	9.993451	30	18
43	45	9.236614	10.763386	9.243168	10.756832	10.006554	9.993446	15	17
44	56	9.236795	10.763205	9.243354	10.756646	10.006560	9.993440	4	16
45	15	9.236975	10.763025	9.243540	10.756460	10.006565	9.993435	45	15
46	30	9.237155	10.762845	9.243726	10.756274	10.006571	9.993429	30	14
47	45	9.237335	10.762665	9.243912	10.756088	10.006576	9.993424	15	13
48	57	9.237515	10.762485	9.244097	10.755903	10.006582	9.993418	3	12
49	15	9.237695	10.762305	9.244283	10.755717	10.006587	9.993413	45	11
50	30	9.237875	10.762125	9.244468	10.755532	10.006593	9.993407	30	10
51	45	9.238055	10.761945	9.244654	10.755346	10.006599	9.993401	15	9
52	58	9.238235	10.761765	9.244839	10.755161	10.006604	9.993396	2	8
53	15	9.238415	10.761585	9.245024	10.754976	10.006610	9.993390	45	7
54	30	9.238594	10.761406	9.245209	10.754791	10.006615	9.993385	30	6
55	45	9.238774	10.761226	9.245394	10.754606	10.006621	9.993379	15	5
56	59	9.238953	10.761047	9.245579	10.754421	10.006626	9.993374	1	4
57	15	9.239132	10.760868	9.245764	10.754236	10.006632	9.993368	45	3
58	30	9.239312	10.760688	9.245949	10.754051	10.006637	9.993363	30	2
59	45	9.239491	10.760509	9.246134	10.753866	10.006643	9.993357	15	1
60	60	9.239670	10.760330	9.246319	10.753681	10.006649	9.993351	0	0
sec.	'	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	'	sec.
5° 20'		LOG. SINES, &c.						80 deg.	

0° 40'.		LOG. SINES, &c. (L.)						10 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.239670	10.760330	9.246319	10.753681	10.006649	9.993351	60	60
1	15	9.239849	10.760151	9.246503	10.753497	10.006654	9.993346	45	59
2	30	9.240028	10.759972	9.246688	10.753312	10.006660	9.993340	30	58
3	45	9.240207	10.759793	9.246872	10.753128	10.006665	9.993335	15	57
4	1	9.240386	10.759614	9.247057	10.752943	10.006671	9.993329	59	56
5	15	9.240565	10.759435	9.247241	10.752750	10.006676	9.993324	45	55
6	30	9.240744	10.759256	9.247425	10.752557	10.006682	9.993318	30	54
7	45	9.240922	10.759078	9.247610	10.752390	10.006688	9.993312	15	53
8	2	9.241101	10.758899	9.247794	10.752206	10.006693	9.993307	58	52
9	15	9.241279	10.758721	9.247978	10.752022	10.006699	9.993301	45	51
10	30	9.241458	10.758542	9.248162	10.751838	10.006704	9.993296	30	50
11	45	9.241636	10.758364	9.248346	10.751654	10.006710	9.993290	15	49
12	3	9.241814	10.758186	9.248530	10.751470	10.006716	9.993284	57	48
13	15	9.241992	10.758008	9.248713	10.751287	10.006721	9.993279	45	47
14	30	9.242170	10.757830	9.248897	10.751103	10.006727	9.993273	30	46
15	45	9.242348	10.757652	9.249081	10.750919	10.006732	9.993268	15	45
16	4	9.242526	10.757474	9.249264	10.750736	10.006738	9.993262	56	44
17	15	9.242704	10.757296	9.249448	10.750552	10.006744	9.993256	45	43
18	30	9.242882	10.757118	9.249631	10.750369	10.006749	9.993251	30	42
19	45	9.243060	10.756940	9.249814	10.750186	10.006755	9.993245	15	41
20	5	9.243237	10.756763	9.249998	10.750002	10.006760	9.993240	55	40
21	15	9.243415	10.756585	9.250181	10.749819	10.006766	9.993234	45	39
22	30	9.243592	10.756408	9.250364	10.749636	10.006772	9.993228	30	38
23	45	9.243770	10.756230	9.250547	10.749453	10.006777	9.993223	15	37
24	6	9.243947	10.756053	9.250730	10.749270	10.006783	9.993217	54	36
25	15	9.244124	10.755876	9.250913	10.749087	10.006789	9.993211	45	35
26	30	9.244302	10.755698	9.251096	10.748904	10.006794	9.993206	30	34
27	45	9.244479	10.755521	9.251278	10.748722	10.006800	9.993200	15	33
28	7	9.244656	10.755344	9.251461	10.748539	10.006805	9.993195	53	32
29	15	9.244833	10.755167	9.251644	10.748356	10.006811	9.993189	45	31
30	30	9.245010	10.754990	9.251826	10.748174	10.006817	9.993183	30	30
31	45	9.245186	10.754814	9.252009	10.747991	10.006822	9.993178	15	29
32	8	9.245363	10.754637	9.252191	10.747809	10.006828	9.993172	52	28
33	15	9.245540	10.754460	9.252373	10.747627	10.006834	9.993166	45	27
34	30	9.245716	10.754284	9.252556	10.747444	10.006839	9.993161	30	26
35	45	9.245893	10.754107	9.252738	10.747262	10.006845	9.993155	15	25
36	9	9.246069	10.753931	9.252920	10.747080	10.006851	9.993149	51	24
37	15	9.246246	10.753754	9.253102	10.746898	10.006856	9.993144	45	23
38	30	9.246422	10.753578	9.253284	10.746716	10.006862	9.993138	30	22
39	45	9.246598	10.753402	9.253466	10.746534	10.006868	9.993132	15	21
40	10	9.246775	10.753225	9.253648	10.746352	10.006873	9.993127	50	20
41	15	9.246951	10.753049	9.253829	10.746171	10.006879	9.993121	45	19
42	30	9.247127	10.752873	9.254011	10.745989	10.006885	9.993115	30	18
43	45	9.247303	10.752697	9.254193	10.745807	10.006890	9.993110	15	17
44	11	9.247478	10.752522	9.254374	10.745626	10.006896	9.993104	49	16
45	15	9.247654	10.752346	9.254556	10.745444	10.006902	9.993098	45	15
46	30	9.247830	10.752170	9.254737	10.745263	10.006907	9.993093	30	14
47	45	9.248006	10.751994	9.254918	10.745082	10.006913	9.993087	15	13
48	12	9.248181	10.751819	9.255100	10.744900	10.006919	9.993081	48	12
49	15	9.248357	10.751643	9.255281	10.744719	10.006924	9.993076	45	11
50	30	9.248532	10.751468	9.255462	10.744538	10.006930	9.993070	30	10
51	45	9.248707	10.751293	9.255643	10.744357	10.006936	9.993064	15	9
52	13	9.248883	10.751117	9.255824	10.744176	10.006941	9.993059	47	8
53	15	9.249058	10.750942	9.256005	10.743995	10.006947	9.993053	45	7
54	30	9.249233	10.750767	9.256186	10.743814	10.006953	9.993047	30	6
55	45	9.249408	10.750592	9.256366	10.743634	10.006958	9.993042	15	5
56	14	9.249583	10.750417	9.256547	10.743453	10.006964	9.993036	46	4
57	15	9.249758	10.750242	9.256728	10.743272	10.006970	9.993030	45	3
58	30	9.249933	10.750067	9.256908	10.743092	10.006976	9.993024	30	2
59	45	9.250107	10.749893	9.257089	10.742911	10.006981	9.993019	15	1
60	15	9.250282	10.749718	9.257269	10.742731	10.006987	9.993013	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5h 19m.		LOG. SINES, &c.						79 deg.	

0 ^h 41 ^m .		LOG. SINES, &c. (t)						10 deg.		
sec.	"	sine.	cosecant	tangent.	cotangent.	secant.	cosine.	"	"	sec.
0	15	9.250282	10.749718	9.257269	10.742731	10.006987	9.993013	45		60
1	15	9.250457	10.749543	9.257449	10.742551	10.006993	9.993007	45		59
2	30	9.250631	10.749369	9.257630	10.742370	10.006998	9.993002	30		58
3	45	9.250806	10.749194	9.257810	10.742190	10.007004	9.992996	15		57
4	16	9.250980	10.749020	9.257990	10.742010	10.007010	9.992990		44	56
5	15	9.251155	10.748845	9.258170	10.741830	10.007016	9.992984	45		55
6	30	9.251329	10.748671	9.258350	10.741650	10.007021	9.992979	30		54
7	45	9.251503	10.748497	9.258530	10.741470	10.007027	9.992973	15		53
8	17	9.251677	10.748323	9.258710	10.741290	10.007033	9.992967		43	52
9	15	9.251851	10.748149	9.258890	10.741110	10.007038	9.992962	45		51
10	30	9.252025	10.747975	9.259069	10.740931	10.007044	9.992956	30		50
11	45	9.252199	10.747801	9.259249	10.740751	10.007050	9.992950	15		49
12	18	9.252373	10.747627	9.259428	10.740572	10.007056	9.992944		42	48
13	15	9.252547	10.747453	9.259608	10.740392	10.007061	9.992939	45		47
14	30	9.252720	10.747280	9.259787	10.740213	10.007067	9.992933	30		46
15	45	9.252894	10.747106	9.259967	10.740033	10.007073	9.992927	15		45
16	19	9.253067	10.746933	9.260146	10.739854	10.007079	9.992921		41	44
17	15	9.253241	10.746759	9.260325	10.739675	10.007084	9.992916	45		43
18	30	9.253414	10.746586	9.260504	10.739496	10.007090	9.992910	30		42
19	45	9.253588	10.746412	9.260683	10.739317	10.007096	9.992904	15		41
20	20	9.253761	10.746239	9.260862	10.739138	10.007102	9.992898		40	40
21	15	9.253934	10.746066	9.261041	10.738959	10.007107	9.992893	45		39
22	30	9.254107	10.745893	9.261220	10.738780	10.007113	9.992887	30		38
23	45	9.254280	10.745720	9.261399	10.738601	10.007119	9.992881	15		37
24	21	9.254453	10.745547	9.261578	10.738422	10.007125	9.992875		39	36
25	15	9.254626	10.745374	9.261757	10.738243	10.007131	9.992869	45		35
26	30	9.254799	10.745201	9.261935	10.738065	10.007136	9.992864	30		34
27	45	9.254972	10.745028	9.262114	10.737886	10.007142	9.992858	15		33
28	22	9.255144	10.744856	9.262292	10.737708	10.007148	9.992852		38	32
29	15	9.255317	10.744683	9.262470	10.737530	10.007154	9.992846	45		31
30	30	9.255489	10.744511	9.262649	10.737351	10.007159	9.992841	30		30
31	45	9.255662	10.744338	9.262827	10.737173	10.007165	9.992835	15		29
32	23	9.255834	10.744166	9.263005	10.736995	10.007171	9.992829		37	28
33	15	9.256007	10.743993	9.263183	10.736817	10.007177	9.992823	45		27
34	30	9.256179	10.743821	9.263361	10.736639	10.007183	9.992817	30		26
35	45	9.256351	10.743649	9.263539	10.736461	10.007188	9.992812	15		25
36	24	9.256523	10.743477	9.263717	10.736283	10.007194	9.992806		36	24
37	15	9.256695	10.743305	9.263895	10.736105	10.007200	9.992800	45		23
38	30	9.256867	10.743133	9.264073	10.735927	10.007206	9.992794	30		22
39	45	9.257039	10.742961	9.264251	10.735749	10.007212	9.992788	15		21
40	25	9.257211	10.742789	9.264428	10.735572	10.007217	9.992783		35	20
41	15	9.257383	10.742617	9.264606	10.735394	10.007223	9.992777	45		19
42	30	9.257554	10.742446	9.264783	10.735217	10.007229	9.992771	30		18
43	45	9.257726	10.742274	9.264961	10.735039	10.007235	9.992765	15		17
44	26	9.257898	10.742102	9.265138	10.734862	10.007241	9.992759		34	16
45	15	9.258069	10.741931	9.265315	10.734685	10.007246	9.992754	45		15
46	30	9.258241	10.741759	9.265493	10.734507	10.007252	9.992748	30		14
47	45	9.258412	10.741588	9.265670	10.734330	10.007258	9.992742	15		13
48	27	9.258583	10.741417	9.265847	10.734153	10.007264	9.992736		33	12
49	15	9.258755	10.741246	9.266024	10.733976	10.007270	9.992730	45		11
50	30	9.258925	10.741075	9.266201	10.733799	10.007276	9.992724	30		10
51	45	9.259097	10.740903	9.266378	10.733622	10.007281	9.992719	15		9
52	28	9.259268	10.740732	9.266555	10.733445	10.007287	9.992713		32	8
53	15	9.259438	10.740562	9.266731	10.733269	10.007293	9.992707	45		7
54	30	9.259609	10.740391	9.266908	10.733092	10.007299	9.992701	30		6
55	45	9.259780	10.740220	9.267085	10.732915	10.007305	9.992695	15		5
56	29	9.259951	10.740049	9.267261	10.732739	10.007311	9.992689		31	4
57	15	9.260121	10.739879	9.267438	10.732562	10.007316	9.992684	45		3
58	30	9.260292	10.739708	9.267614	10.732386	10.007322	9.992678	30		2
59	45	9.260463	10.739537	9.267791	10.732209	10.007328	9.992672	15		1
60	30	9.260633	10.739367	9.267967	10.732033	10.007334	9.992666		30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"	sec.
5 ^h 18 ^m .		LOG. SINES, &c.						79 deg.		

0° 42'		LOG. SINES, &c. (t.)						10 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	9.260633	10.739367	9.267967	10.732033	10.007334	9.992666	30	60
1	15	9.260803	10.739197	9.268143	10.731857	10.007340	9.992660	45	59
2	30	9.260974	10.739026	9.268319	10.731681	10.007346	9.992654	30	58
3	45	9.261144	10.738856	9.268495	10.731505	10.007351	9.992649	15	57
4	31	9.261314	10.738686	9.268671	10.731329	10.007357	9.992643	29	56
5	15	9.261484	10.738516	9.268847	10.731153	10.007363	9.992637	45	55
6	30	9.261654	10.738346	9.269023	10.730977	10.007369	9.992631	30	54
7	45	9.261824	10.738176	9.269199	10.730801	10.007375	9.992625	15	53
8	32	9.261994	10.738006	9.269375	10.730625	10.007381	9.992619	28	52
9	15	9.262164	10.737836	9.269551	10.730449	10.007387	9.992613	45	51
10	30	9.262334	10.737666	9.269726	10.730274	10.007393	9.992607	30	50
11	45	9.262503	10.737497	9.269902	10.730098	10.007398	9.992602	15	49
12	33	9.262673	10.737327	9.270077	10.729923	10.007404	9.992596	27	48
13	15	9.262842	10.737158	9.270253	10.729747	10.007410	9.992590	45	47
14	30	9.263012	10.736988	9.270428	10.729572	10.007416	9.992584	30	46
15	45	9.263181	10.736819	9.270603	10.729397	10.007422	9.992578	15	45
16	34	9.263351	10.736649	9.270779	10.729221	10.007428	9.992572	26	44
17	15	9.263520	10.736480	9.270954	10.729046	10.007434	9.992566	45	43
18	30	9.263689	10.736311	9.271129	10.728871	10.007440	9.992560	30	42
19	45	9.263858	10.736142	9.271304	10.728696	10.007446	9.992554	15	41
20	35	9.264027	10.735973	9.271479	10.728521	10.007451	9.992549	25	40
21	15	9.264196	10.735804	9.271654	10.728346	10.007457	9.992543	45	39
22	30	9.264365	10.735635	9.271829	10.728171	10.007463	9.992537	30	38
23	45	9.264534	10.735466	9.272003	10.727997	10.007469	9.992531	15	37
24	36	9.264703	10.735297	9.272178	10.727822	10.007475	9.992525	24	36
25	15	9.264872	10.735128	9.272353	10.727647	10.007481	9.992519	45	35
26	30	9.265040	10.734960	9.272527	10.727473	10.007487	9.992513	30	34
27	45	9.265209	10.734791	9.272702	10.727298	10.007493	9.992507	15	33
28	37	9.265377	10.734623	9.272876	10.727124	10.007499	9.992501	23	32
29	15	9.265546	10.734454	9.273051	10.726949	10.007505	9.992495	45	31
30	30	9.265714	10.734286	9.273225	10.726775	10.007511	9.992489	30	30
31	45	9.265883	10.734117	9.273399	10.726601	10.007517	9.992483	15	29
32	38	9.266051	10.733949	9.273573	10.726427	10.007522	9.992478	22	28
33	15	9.266219	10.733781	9.273747	10.726253	10.007528	9.992472	45	27
34	30	9.266387	10.733613	9.273921	10.726079	10.007534	9.992466	30	26
35	45	9.266555	10.733445	9.274095	10.725905	10.007540	9.992460	15	25
36	39	9.266723	10.733277	9.274269	10.725731	10.007546	9.992454	21	24
37	15	9.266891	10.733109	9.274443	10.725557	10.007552	9.992448	45	23
38	30	9.267059	10.732941	9.274617	10.725383	10.007558	9.992442	30	22
39	45	9.267227	10.732773	9.274791	10.725209	10.007564	9.992436	15	21
40	40	9.267394	10.732606	9.274964	10.725036	10.007570	9.992430	20	20
41	15	9.267562	10.732438	9.275138	10.724862	10.007576	9.992424	45	19
42	30	9.267730	10.732270	9.275312	10.724688	10.007582	9.992418	30	18
43	45	9.267897	10.732103	9.275485	10.724515	10.007588	9.992412	15	17
44	41	9.268065	10.731935	9.275658	10.724342	10.007594	9.992406	19	16
45	15	9.268232	10.731768	9.275832	10.724168	10.007600	9.992400	45	15
46	30	9.268399	10.731601	9.276005	10.723995	10.007606	9.992394	30	14
47	45	9.268567	10.731433	9.276178	10.723822	10.007612	9.992388	15	13
48	42	9.268734	10.731266	9.276351	10.723649	10.007618	9.992382	18	12
49	15	9.268901	10.731099	9.276524	10.723476	10.007624	9.992376	45	11
50	30	9.269068	10.730932	9.276697	10.723303	10.007630	9.992370	30	10
51	45	9.269235	10.730765	9.276870	10.723130	10.007636	9.992364	15	9
52	43	9.269402	10.730598	9.277043	10.722957	10.007642	9.992358	17	8
53	15	9.269569	10.730431	9.277216	10.722784	10.007648	9.992352	45	7
54	30	9.269735	10.730265	9.277389	10.722611	10.007653	9.992347	30	6
55	45	9.269902	10.730098	9.277562	10.722438	10.007659	9.992341	15	5
56	44	9.270069	10.729931	9.277734	10.722266	10.007665	9.992335	16	4
57	15	9.270235	10.729765	9.277907	10.722093	10.007671	9.992329	45	3
58	30	9.270402	10.729598	9.278079	10.721921	10.007677	9.992323	30	2
59	45	9.270568	10.729432	9.278252	10.721748	10.007683	9.992317	15	1
60	45	9.270735	10.729265	9.278424	10.721576	10.007689	9.992311	15	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 17'		LOG. SINES, &c.						79 deg.	

0° 43'		LOG. SINES, &c. (1.)						10 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.270735	10.729265	9.278424	10.721576	10.007689	9.992311	15	60
1	15	9.270901	10.729099	9.278596	10.721404	10.007695	9.992305	45	59
2	30	9.271067	10.728933	9.278769	10.721231	10.007701	9.992299	30	58
3	45	9.271234	10.728766	9.278941	10.721059	10.007707	9.992293	15	57
4	46	9.271400	10.728600	9.279113	10.720887	10.007713	9.992287	14	56
5	15	9.271566	10.728434	9.279285	10.720715	10.007719	9.992281	45	55
6	30	9.271732	10.728268	9.279457	10.720543	10.007725	9.992275	30	54
7	45	9.271898	10.728102	9.279629	10.720371	10.007731	9.992269	15	53
8	47	9.272063	10.727937	9.279801	10.720199	10.007737	9.992263	13	52
9	15	9.272229	10.727771	9.279973	10.720027	10.007743	9.992257	45	51
10	30	9.272395	10.727605	9.280144	10.719856	10.007749	9.992251	30	50
11	45	9.272561	10.727439	9.280316	10.719684	10.007756	9.992244	15	49
12	48	9.272726	10.727274	9.280488	10.719512	10.007762	9.992238	12	48
13	15	9.272892	10.727108	9.280659	10.719341	10.007768	9.992232	45	47
14	30	9.273057	10.726943	9.280831	10.719169	10.007774	9.992226	30	46
15	45	9.273223	10.726777	9.281002	10.718998	10.007780	9.992220	15	45
16	49	9.273388	10.726612	9.281174	10.718826	10.007786	9.992214	11	44
17	15	9.273553	10.726447	9.281345	10.718655	10.007792	9.992208	45	43
18	30	9.273718	10.726282	9.281516	10.718484	10.007798	9.992202	30	42
19	45	9.273884	10.726116	9.281687	10.718313	10.007804	9.992196	15	41
20	50	9.274049	10.725951	9.281858	10.718142	10.007810	9.992190	10	40
21	15	9.274214	10.725786	9.282029	10.717971	10.007816	9.992184	45	39
22	30	9.274379	10.725621	9.282200	10.717800	10.007822	9.992178	30	38
23	45	9.274543	10.725457	9.282371	10.717629	10.007828	9.992172	15	37
24	51	9.274708	10.725292	9.282542	10.717458	10.007834	9.992166	9	36
25	15	9.274873	10.725127	9.282713	10.717287	10.007840	9.992160	45	35
26	30	9.275038	10.724962	9.282884	10.717116	10.007846	9.992154	30	34
27	45	9.275202	10.724798	9.283054	10.716946	10.007852	9.992148	15	33
28	52	9.275367	10.724633	9.283225	10.716775	10.007858	9.992142	8	32
29	15	9.275531	10.724469	9.283396	10.716604	10.007864	9.992136	45	31
30	30	9.275696	10.724304	9.283566	10.716434	10.007870	9.992130	30	30
31	45	9.275860	10.724140	9.283737	10.716263	10.007876	9.992124	15	29
32	53	9.276024	10.723976	9.283907	10.716093	10.007883	9.992117	7	28
33	15	9.276189	10.723811	9.284077	10.715923	10.007889	9.992111	45	27
34	30	9.276353	10.723647	9.284247	10.715753	10.007895	9.992105	30	26
35	45	9.276517	10.723483	9.284418	10.715582	10.007901	9.992099	15	25
36	54	9.276681	10.723319	9.284588	10.715412	10.007907	9.992093	6	24
37	15	9.276845	10.723155	9.284758	10.715242	10.007913	9.992087	45	23
38	30	9.277009	10.722991	9.284928	10.715072	10.007919	9.992081	30	22
39	45	9.277173	10.722827	9.285098	10.714902	10.007925	9.992075	15	21
40	55	9.277337	10.722663	9.285268	10.714732	10.007931	9.992069	5	20
41	15	9.277500	10.722500	9.285437	10.714563	10.007937	9.992063	45	19
42	30	9.277664	10.722336	9.285607	10.714393	10.007943	9.992057	30	18
43	45	9.277827	10.722173	9.285777	10.714223	10.007949	9.992051	15	17
44	56	9.277991	10.722009	9.285947	10.714053	10.007956	9.992044	4	16
45	15	9.278154	10.721846	9.286116	10.713884	10.007962	9.992038	45	15
46	30	9.278318	10.721682	9.286286	10.713714	10.007968	9.992032	30	14
47	45	9.278481	10.721519	9.286455	10.713545	10.007974	9.992026	15	13
48	57	9.278644	10.721356	9.286624	10.713376	10.007980	9.992020	3	12
49	15	9.278808	10.721192	9.286794	10.713206	10.007986	9.992014	45	11
50	30	9.278971	10.721029	9.286963	10.713037	10.007992	9.992008	30	10
51	45	9.279134	10.720866	9.287132	10.712868	10.007998	9.992002	15	9
52	58	9.279297	10.720703	9.287301	10.712699	10.008004	9.991996	2	8
53	15	9.279460	10.720540	9.287470	10.712530	10.008011	9.991989	45	7
54	30	9.279623	10.720377	9.287639	10.712361	10.008017	9.991983	30	6
55	45	9.279786	10.720214	9.287808	10.712192	10.008023	9.991977	15	5
56	59	9.279948	10.720052	9.287977	10.712023	10.008029	9.991971	1	4
57	15	9.280111	10.719889	9.288146	10.711854	10.008035	9.991965	45	3
58	30	9.280274	10.719726	9.288315	10.711685	10.008041	9.991959	30	2
59	45	9.280436	10.719564	9.288484	10.711516	10.008047	9.991953	15	1
60	60	9.280599	10.719401	9.288652	10.711348	10.008053	9.991947	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 16'		LOG. SINES, &c.						79 deg.	

0° 44'.		LOG. SINES, &c. (t.)						11 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.280599	10.719401	9.288652	10.711348	10.008053	9.991947	60	60
1	15	9.280761	10.719239	9.288821	10.711179	10.008060	9.991940	45	59
2	30	9.280924	10.719076	9.288989	10.711011	10.008066	9.991934	30	58
3	45	9.281086	10.718914	9.289158	10.710842	10.008072	9.991928	15	57
4	1	9.281248	10.718752	9.289326	10.710674	10.008078	9.991922	59	56
5	15	9.281410	10.718590	9.289495	10.710505	10.008084	9.991916	45	55
6	30	9.281573	10.718427	9.289663	10.710337	10.008090	9.991910	30	54
7	45	9.281735	10.718265	9.289831	10.710169	10.008097	9.991903	15	53
8	2	9.281897	10.718103	9.289999	10.710001	10.008103	9.991897	58	52
9	15	9.282059	10.717941	9.290167	10.709833	10.008109	9.991891	45	51
10	30	9.282220	10.717780	9.290335	10.709665	10.008115	9.991885	30	50
11	45	9.282382	10.717618	9.290503	10.709497	10.008121	9.991879	15	49
12	3	9.282544	10.717456	9.290671	10.709329	10.008127	9.991873	57	48
13	15	9.282706	10.717294	9.290839	10.709161	10.008133	9.991867	45	47
14	30	9.282867	10.717133	9.291007	10.708993	10.008140	9.991860	30	46
15	45	9.283029	10.716971	9.291175	10.708825	10.008146	9.991854	15	45
16	4	9.283190	10.716810	9.291342	10.708658	10.008152	9.991848	56	44
17	15	9.283352	10.716648	9.291510	10.708490	10.008158	9.991842	45	43
18	30	9.283513	10.716487	9.291678	10.708322	10.008164	9.991836	30	42
19	45	9.283675	10.716325	9.291845	10.708155	10.008171	9.991829	15	41
20	5	9.283836	10.716164	9.292013	10.707987	10.008177	9.991823	55	40
21	15	9.283997	10.716003	9.292180	10.707820	10.008183	9.991817	45	39
22	30	9.284158	10.715842	9.292347	10.707653	10.008189	9.991811	30	38
23	45	9.284319	10.715681	9.292514	10.707486	10.008195	9.991805	15	37
24	6	9.284480	10.715520	9.292682	10.707318	10.008201	9.991799	54	36
25	15	9.284641	10.715359	9.292849	10.707151	10.008208	9.991792	45	35
26	30	9.284802	10.715198	9.293016	10.706984	10.008214	9.991786	30	34
27	45	9.284963	10.715037	9.293183	10.706817	10.008220	9.991780	15	33
28	7	9.285124	10.714876	9.293350	10.706650	10.008226	9.991774	53	32
29	15	9.285284	10.714716	9.293517	10.706483	10.008233	9.991767	45	31
30	30	9.285445	10.714555	9.293684	10.706316	10.008239	9.991761	30	30
31	45	9.285606	10.714394	9.293850	10.706150	10.008245	9.991755	15	29
32	8	9.285766	10.714233	9.294017	10.705983	10.008251	9.991749	52	28
33	15	9.285927	10.714073	9.294184	10.705816	10.008257	9.991743	45	27
34	30	9.286087	10.713913	9.294350	10.705650	10.008264	9.991736	30	26
35	45	9.286247	10.713753	9.294517	10.705483	10.008270	9.991730	15	25
36	9	9.286408	10.713592	9.294684	10.705316	10.008276	9.991724	51	24
37	15	9.286568	10.713432	9.294850	10.705150	10.008282	9.991718	45	23
38	30	9.286728	10.713272	9.295016	10.704984	10.008288	9.991712	30	22
39	45	9.286888	10.713112	9.295183	10.704817	10.008295	9.991705	15	21
40	10	9.287048	10.712952	9.295349	10.704651	10.008301	9.991699	50	20
41	15	9.287208	10.712792	9.295515	10.704485	10.008307	9.991693	45	19
42	30	9.287368	10.712632	9.295681	10.704319	10.008313	9.991687	30	18
43	45	9.287528	10.712472	9.295847	10.704153	10.008320	9.991680	15	17
44	11	9.287687	10.712313	9.296013	10.703987	10.008326	9.991674	49	16
45	15	9.287847	10.712153	9.296179	10.703821	10.008332	9.991668	45	15
46	30	9.288007	10.711993	9.296345	10.703655	10.008338	9.991662	30	14
47	45	9.288166	10.711834	9.296511	10.703489	10.008345	9.991655	15	13
48	12	9.288326	10.711674	9.296677	10.703323	10.008351	9.991649	48	12
49	15	9.288485	10.711515	9.296843	10.703157	10.008357	9.991643	45	11
50	30	9.288645	10.711355	9.297008	10.702992	10.008363	9.991637	30	10
51	45	9.288804	10.711196	9.297174	10.702826	10.008370	9.991630	15	9
52	13	9.288964	10.711036	9.297339	10.702661	10.008376	9.991624	47	8
53	15	9.289123	10.710877	9.297505	10.702495	10.008382	9.991618	45	7
54	30	9.289282	10.710718	9.297670	10.702330	10.008388	9.991612	30	6
55	45	9.289441	10.710559	9.297836	10.702164	10.008395	9.991605	15	5
56	14	9.289600	10.710400	9.298001	10.701999	10.008401	9.991599	46	4
57	15	9.289759	10.710241	9.298166	10.701834	10.008407	9.991593	45	3
58	30	9.289918	10.710082	9.298332	10.701668	10.008414	9.991586	30	2
59	45	9.290077	10.709923	9.298497	10.701503	10.008420	9.991580	15	1
60	15	9.290236	10.709764	9.298662	10.701338	10.008426	9.991574	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 15'.		LOG. SINES, &c.						78 deg.	

0° 45'		LOG. SINES, &c. (t.)						11 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"
0	15	9.290236	10.709764	9.298662	10.701338	10.008426	9.991574	45	
1	15	9.290394	10.709606	9.298827	10.701173	10.008432	9.991568	45	
2	30	9.290553	10.709447	9.298992	10.701008	10.008439	9.991561	30	
3	45	9.290712	10.709288	9.299157	10.700843	10.008445	9.991555	15	
4	16	9.290870	10.709130	9.299322	10.700678	10.008451	9.991549		44
5	15	9.291029	10.708971	9.299486	10.700514	10.008458	9.991542	45	
6	30	9.291187	10.708813	9.299651	10.700349	10.008464	9.991536	30	
7	45	9.291346	10.708654	9.299816	10.700184	10.008470	9.991530	15	
8	17	9.291504	10.708496	9.299980	10.700020	10.008476	9.991524		43
9	15	9.291662	10.708338	9.300145	10.699855	10.008483	9.991517	45	
10	30	9.291820	10.708180	9.300309	10.699691	10.008489	9.991511	30	
11	45	9.291979	10.708021	9.300474	10.699526	10.008495	9.991505	15	
12	18	9.292137	10.707863	9.300638	10.699362	10.008502	9.991498		42
13	15	9.292295	10.707705	9.300803	10.699197	10.008508	9.991492	45	
14	30	9.292453	10.707547	9.300967	10.699033	10.008514	9.991486	30	
15	45	9.292611	10.707389	9.301131	10.698869	10.008521	9.991479	15	
16	19	9.292768	10.707232	9.301295	10.698705	10.008527	9.991473		41
17	15	9.292926	10.707074	9.301459	10.698541	10.008533	9.991467	45	
18	30	9.293084	10.706916	9.301623	10.698377	10.008540	9.991460	30	
19	45	9.293242	10.706758	9.301787	10.698213	10.008546	9.991454	15	
20	20	9.293399	10.706601	9.301951	10.698049	10.008552	9.991448		40
21	15	9.293557	10.706443	9.302115	10.697885	10.008559	9.991441	45	
22	30	9.293714	10.706286	9.302279	10.697721	10.008565	9.991435	30	
23	45	9.293872	10.706128	9.302443	10.697557	10.008571	9.991429	15	
24	21	9.294029	10.705971	9.302607	10.697393	10.008578	9.991422		39
25	15	9.294186	10.705814	9.302770	10.697230	10.008584	9.991416	45	
26	30	9.294344	10.705656	9.302934	10.697066	10.008590	9.991410	30	
27	45	9.294501	10.705499	9.303097	10.696903	10.008597	9.991403	15	
28	22	9.294658	10.705342	9.303261	10.696739	10.008603	9.991397		38
29	15	9.294815	10.705185	9.303424	10.696576	10.008609	9.991391	45	
30	30	9.294972	10.705028	9.303588	10.696412	10.008616	9.991384	30	
31	45	9.295129	10.704871	9.303751	10.696249	10.008622	9.991378	15	
32	23	9.295286	10.704714	9.303914	10.696086	10.008628	9.991372		37
33	15	9.295443	10.704557	9.304077	10.695923	10.008635	9.991365	45	
34	30	9.295600	10.704400	9.304241	10.695759	10.008641	9.991359	30	
35	45	9.295756	10.704244	9.304404	10.695596	10.008647	9.991353	15	
36	24	9.295913	10.704087	9.304567	10.695433	10.008654	9.991346		36
37	15	9.296070	10.703930	9.304730	10.695270	10.008660	9.991340	45	
38	30	9.296226	10.703774	9.304893	10.695107	10.008667	9.991333	30	
39	45	9.296383	10.703617	9.305055	10.694945	10.008673	9.991327	15	
40	25	9.296539	10.703461	9.305218	10.694782	10.008679	9.991321		35
41	15	9.296695	10.703305	9.305381	10.694619	10.008686	9.991314	45	
42	30	9.296852	10.703148	9.305544	10.694456	10.008692	9.991308	30	
43	45	9.297008	10.702992	9.305706	10.694294	10.008698	9.991302	15	
44	26	9.297164	10.702836	9.305869	10.694131	10.008705	9.991295		34
45	15	9.297320	10.702680	9.306031	10.693969	10.008711	9.991289	45	
46	30	9.297476	10.702524	9.306194	10.693806	10.008718	9.991282	30	
47	45	9.297632	10.702368	9.306356	10.693644	10.008724	9.991276	15	
48	27	9.297788	10.702212	9.306519	10.693481	10.008730	9.991270		33
49	15	9.297944	10.702056	9.306681	10.693319	10.008737	9.991263	45	
50	30	9.298100	10.701900	9.306843	10.693157	10.008743	9.991257	30	
51	45	9.298256	10.701744	9.307005	10.692995	10.008750	9.991250	15	
52	28	9.298412	10.701588	9.307167	10.692833	10.008756	9.991244		32
53	15	9.298567	10.701433	9.307330	10.692670	10.008762	9.991238	45	
54	30	9.298723	10.701277	9.307492	10.692508	10.008769	9.991231	30	
55	45	9.298878	10.701122	9.307654	10.692346	10.008775	9.991225	15	
56	29	9.299034	10.700966	9.307815	10.692185	10.008782	9.991218		31
57	15	9.299189	10.700811	9.307977	10.692023	10.008788	9.991212	45	
58	30	9.299345	10.700655	9.308139	10.691861	10.008794	9.991206	30	
59	45	9.299500	10.700500	9.308301	10.691699	10.008801	9.991199	15	
60	30	9.299655	10.700345	9.308463	10.691537	10.008807	9.991193		30
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"
5h 14m.		LOG. SINES, &c.						78 deg	

0° 46'.		LOG. SINES, &c. (t.)					11 deg.	
	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.		sec.
30	9.299655	10.700345	9.308463	10.691537	10.008807	9.991193	30	60
15	9.299810	10.700190	9.308624	10.691376	10.008814	9.991186	45	59
30	9.299966	10.700034	9.308786	10.691214	10.008820	9.991180	30	58
45	9.300121	10.699879	9.308947	10.691053	10.008827	9.991173	15	57
31	9.300276	10.699724	9.309109	10.690891	10.008833	9.991167	29	56
15	9.300431	10.699569	9.309270	10.690730	10.008840	9.991160	45	55
30	9.300586	10.699414	9.309432	10.690568	10.008846	9.991154	30	54
45	9.300740	10.699260	9.309593	10.690407	10.008852	9.991148	15	53
32	9.300895	10.699105	9.309754	10.690246	10.008859	9.991141	28	52
15	9.301050	10.698950	9.309915	10.690085	10.008865	9.991135	45	51
30	9.301205	10.698795	9.310076	10.689924	10.008872	9.991128	30	50
45	9.301359	10.698641	9.310237	10.689763	10.008878	9.991122	15	49
33	9.301514	10.698486	9.310398	10.689602	10.008885	9.991115	27	48
15	9.301668	10.698332	9.310559	10.689441	10.008891	9.991109	45	47
30	9.301823	10.698177	9.310720	10.689280	10.008898	9.991102	30	46
45	9.301977	10.698023	9.310881	10.689119	10.008904	9.991096	15	45
34	9.302132	10.697868	9.311042	10.688958	10.008910	9.991090	26	44
15	9.302286	10.697714	9.311203	10.688797	10.008917	9.991083	45	43
30	9.302440	10.697560	9.311363	10.688637	10.008923	9.991077	30	42
45	9.302594	10.697406	9.311524	10.688476	10.008930	9.991070	15	41
35	9.302748	10.697252	9.311685	10.688315	10.008936	9.991064	25	40
15	9.302903	10.697097	9.311845	10.688155	10.008943	9.991057	45	39
30	9.303057	10.696943	9.312006	10.687994	10.008949	9.991051	30	38
45	9.303210	10.696790	9.312166	10.687834	10.008956	9.991044	15	37
36	9.303364	10.696636	9.312327	10.687673	10.008962	9.991038	24	36
15	9.303518	10.696482	9.312487	10.687513	10.008969	9.991031	45	35
30	9.303672	10.696328	9.312647	10.687353	10.008975	9.991025	30	34
45	9.303826	10.696174	9.312807	10.687193	10.008982	9.991018	15	33
37	9.303979	10.696021	9.312967	10.687033	10.008988	9.991012	23	32
15	9.304133	10.695867	9.313128	10.686872	10.008995	9.991005	45	31
30	9.304286	10.695714	9.313288	10.686712	10.009001	9.990999	30	30
45	9.304440	10.695560	9.313448	10.686552	10.009008	9.990992	15	29
38	9.304593	10.695407	9.313608	10.686392	10.009014	9.990986	22	28
15	9.304747	10.695253	9.313767	10.686233	10.009021	9.990979	45	27
30	9.304900	10.695100	9.313927	10.686073	10.009027	9.990973	30	26
45	9.305053	10.694947	9.314087	10.685913	10.009034	9.990966	15	25
39	9.305207	10.694793	9.314247	10.685753	10.009040	9.990960	21	24
15	9.305360	10.694640	9.314406	10.685594	10.009047	9.990953	45	23
30	9.305513	10.694487	9.314566	10.685434	10.009053	9.990947	30	22
45	9.305666	10.694334	9.314726	10.685274	10.009060	9.990940	15	21
40	9.305819	10.694181	9.314885	10.685115	10.009066	9.990934	20	20
15	9.305972	10.694028	9.315045	10.684955	10.009073	9.990927	45	19
30	9.306125	10.693875	9.315204	10.684796	10.009079	9.990921	30	18
45	9.306277	10.693723	9.315363	10.684637	10.009086	9.990914	15	17
41	9.306430	10.693570	9.315523	10.684477	10.009092	9.990908	19	16
15	9.306583	10.693417	9.315682	10.684318	10.009099	9.990901	45	15
30	9.306736	10.693264	9.315841	10.684159	10.009105	9.990895	30	14
45	9.306889	10.693112	9.316000	10.684000	10.009112	9.990888	15	13
42	9.307041	10.692959	9.316159	10.683841	10.009119	9.990881	18	12
15	9.307193	10.692807	9.316318	10.683682	10.009125	9.990875	45	11
30	9.307346	10.692654	9.316477	10.683523	10.009132	9.990868	30	10
45	9.307499	10.692502	9.316636	10.683364	10.009138	9.990862	15	9
43	9.307650	10.692350	9.316795	10.683205	10.009145	9.990855	17	8
15	9.307803	10.692197	9.316954	10.683046	10.009151	9.990849	45	7
30	9.307955	10.692045	9.317112	10.682888	10.009158	9.990842	30	6
45	9.308107	10.691893	9.317271	10.682729	10.009164	9.990836	15	5
44	9.308259	10.691741	9.317430	10.682570	10.009171	9.990829	16	4
15	9.308411	10.691589	9.317588	10.682412	10.009177	9.990823	45	3
30	9.308563	10.691437	9.317747	10.682253	10.009184	9.990816	30	2
45	9.308715	10.691285	9.317905	10.682095	10.009191	9.990809	15	1
45	9.308867	10.691133	9.318064	10.681936	10.009197	9.990803	15	0
	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
5° 13'		LOG. SINES, &c.					78 deg.	

0 ^h 47 ^m			LOG. SINES, &c. (t)						11 deg		
sec.	'	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	'	"	sec.
0	45		9.308867	10.691133	9.318064	10.681936	10.009197	9.990803		15	60
1		15	9.309019	10.690981	9.318222	10.681778	10.009204	9.990796	45		59
2		30	9.309170	10.690830	9.318381	10.681619	10.009210	9.990790	30		58
3		45	9.309322	10.690678	9.318539	10.681461	10.009217	9.990783	15		57
4	46		9.309474	10.690526	9.318697	10.681303	10.009223	9.990777		14	56
5		15	9.309625	10.690375	9.318855	10.681145	10.009230	9.990770	45		55
6		30	9.309777	10.690223	9.319013	10.680987	10.009237	9.990763	30		54
7		45	9.309928	10.690072	9.319171	10.680829	10.009243	9.990757	15		53
8	47		9.310080	10.689920	9.319329	10.680671	10.009250	9.990750		13	52
9		15	9.310231	10.689769	9.319487	10.680513	10.009256	9.990744	45		51
10		30	9.310382	10.689618	9.319645	10.680355	10.009263	9.990737	30		50
11		45	9.310534	10.689466	9.319803	10.680197	10.009270	9.990730	15		49
12	48		9.310685	10.689315	9.319961	10.680039	10.009276	9.990724		12	48
13		15	9.310836	10.689164	9.320119	10.679881	10.009283	9.990717	45		47
14		30	9.310987	10.689013	9.320276	10.679724	10.009289	9.990711	30		46
15		45	9.311138	10.688862	9.320434	10.679566	10.009296	9.990704	15		45
16	49		9.311289	10.688711	9.320592	10.679408	10.009303	9.990697		11	44
17		15	9.311440	10.688560	9.320749	10.679251	10.009309	9.990691	45		43
18		30	9.311591	10.688409	9.320907	10.679093	10.009316	9.990684	30		42
19		45	9.311742	10.688258	9.321064	10.678936	10.009322	9.990678	15		41
20	50		9.311893	10.688107	9.321222	10.678778	10.009329	9.990671		10	40
21		15	9.312043	10.687957	9.321379	10.678621	10.009336	9.990664	45		39
22		30	9.312194	10.687806	9.321536	10.678464	10.009342	9.990658	30		38
23		45	9.312345	10.687655	9.321693	10.678307	10.009349	9.990651	15		37
24	51		9.312495	10.687505	9.321851	10.678149	10.009356	9.990644		9	36
25		15	9.312646	10.687354	9.322008	10.677992	10.009362	9.990638	45		35
26		30	9.312796	10.687204	9.322165	10.677835	10.009369	9.990631	30		34
27		45	9.312946	10.687054	9.322322	10.677678	10.009375	9.990625	15		33
28	52		9.313097	10.686903	9.322479	10.677521	10.009382	9.990618		8	32
29		15	9.313247	10.686753	9.322636	10.677364	10.009389	9.990611	45		31
30		30	9.313397	10.686603	9.322793	10.677207	10.009395	9.990605	30		30
31		45	9.313547	10.686453	9.322949	10.677051	10.009402	9.990598	15		29
32	53		9.313698	10.686302	9.323106	10.676894	10.009409	9.990591		7	28
33		15	9.313848	10.686152	9.323263	10.676737	10.009415	9.990585	45		27
34		30	9.313998	10.686002	9.323419	10.676581	10.009422	9.990578	30		26
35		45	9.314148	10.685852	9.323576	10.676424	10.009429	9.990571	15		25
36	54		9.314297	10.685703	9.323733	10.676267	10.009435	9.990565		6	24
37		15	9.314447	10.685553	9.323889	10.676111	10.009442	9.990558	45		23
38		30	9.314597	10.685403	9.324046	10.675954	10.009449	9.990551	30		22
39		45	9.314747	10.685253	9.324202	10.675798	10.009455	9.990545	15		21
40	55		9.314896	10.685104	9.324358	10.675642	10.009462	9.990538		5	20
41		15	9.315046	10.684954	9.324515	10.675485	10.009469	9.990531	45		19
42		30	9.315196	10.684804	9.324671	10.675329	10.009475	9.990525	30		18
43		45	9.315345	10.684655	9.324827	10.675173	10.009482	9.990518	15		17
44	56		9.315495	10.684505	9.324983	10.675017	10.009489	9.990511		4	16
45		15	9.315644	10.684356	9.325139	10.674861	10.009495	9.990505	45		15
46		30	9.315793	10.684207	9.325295	10.674705	10.009502	9.990498	30		14
47		45	9.315943	10.684057	9.325451	10.674549	10.009509	9.990491	15		13
48	57		9.316092	10.683908	9.325607	10.674393	10.009515	9.990485		3	12
49		15	9.316241	10.683759	9.325763	10.674237	10.009522	9.990478	45		11
50		30	9.316390	10.683610	9.325919	10.674081	10.009529	9.990471	30		10
51		45	9.316539	10.683461	9.326075	10.673925	10.009535	9.990465	15		9
52	58		9.316688	10.683312	9.326230	10.673770	10.009542	9.990458		2	8
53		15	9.316837	10.683163	9.326386	10.673614	10.009549	9.990451	45		7
54		30	9.316986	10.683014	9.326542	10.673458	10.009555	9.990445	30		6
55		45	9.317135	10.682865	9.326697	10.673303	10.009562	9.990438	15		5
56	59		9.317284	10.682716	9.326853	10.673147	10.009569	9.990431		1	4
57		15	9.317433	10.682567	9.327008	10.672992	10.009576	9.990424	45		3
58		30	9.317582	10.682418	9.327164	10.672836	10.009582	9.990418	30		2
59		45	9.317730	10.682270	9.327319	10.672681	10.009589	9.990411	15		1
60	60		9.317879	10.682121	9.327474	10.672526	10.009596	9.990404		0	0
sec.	'	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	'	"	sec.
5 ^h 12 ^m			LOG. SINES, &c.						78 deg.		

0° 48'.		LOG. SINES, &c. (L.)						12 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.317879	10.682121	9.327474	10.672526	10.009596	9.990404	60	60
1	15	9.318027	10.681973	9.327630	10.672370	10.009602	9.990398	45	59
2	30	9.318176	10.681824	9.327785	10.672215	10.009609	9.990391	30	58
3	45	9.318324	10.681676	9.327940	10.672060	10.009616	9.990384	15	57
4	1	9.318473	10.681527	9.328095	10.671905	10.009623	9.990377	59	56
5	15	9.318621	10.681379	9.328250	10.671750	10.009629	9.990371	45	55
6	30	9.318769	10.681231	9.328405	10.671595	10.009636	9.990364	30	54
7	45	9.318918	10.681082	9.328560	10.671440	10.009643	9.990357	15	53
8	2	9.319066	10.680934	9.328715	10.671285	10.009649	9.990351	58	52
9	15	9.319214	10.680786	9.328870	10.671130	10.009656	9.990344	45	51
10	30	9.319362	10.680638	9.329025	10.670975	10.009663	9.990337	30	50
11	45	9.319510	10.680490	9.329180	10.670820	10.009670	9.990330	15	49
12	3	9.319658	10.680342	9.329334	10.670666	10.009676	9.990324	57	48
13	15	9.319806	10.680194	9.329489	10.670511	10.009683	9.990317	45	47
14	30	9.319954	10.680046	9.329644	10.670356	10.009690	9.990310	30	46
15	45	9.320102	10.679898	9.329798	10.670202	10.009697	9.990303	15	45
16	4	9.320249	10.679751	9.329953	10.670047	10.009703	9.990297	56	44
17	15	9.320397	10.679603	9.330107	10.669893	10.009710	9.990290	45	43
18	30	9.320545	10.679455	9.330262	10.669738	10.009717	9.990283	30	42
19	45	9.320692	10.679308	9.330416	10.669584	10.009724	9.990276	15	41
20	5	9.320840	10.679160	9.330570	10.669430	10.009730	9.990270	55	40
21	15	9.320987	10.679013	9.330725	10.669275	10.009737	9.990263	45	39
22	30	9.321135	10.678865	9.330879	10.669121	10.009744	9.990256	30	38
23	45	9.321282	10.678718	9.331033	10.668967	10.009751	9.990249	15	37
24	6	9.321430	10.678570	9.331187	10.668813	10.009757	9.990243	54	36
25	15	9.321577	10.678423	9.331341	10.668659	10.009764	9.990236	45	35
26	30	9.321724	10.678276	9.331495	10.668505	10.009771	9.990229	30	34
27	45	9.321871	10.678129	9.331649	10.668351	10.009778	9.990222	15	33
28	7	9.322019	10.677981	9.331803	10.668197	10.009785	9.990215	53	32
29	15	9.322166	10.677834	9.331957	10.668043	10.009791	9.990209	45	31
30	30	9.322313	10.677687	9.332111	10.667889	10.009798	9.990202	30	30
31	45	9.322460	10.677540	9.332265	10.667735	10.009805	9.990195	15	29
32	8	9.322607	10.677393	9.332418	10.667582	10.009812	9.990188	52	28
33	15	9.322753	10.677247	9.332572	10.667428	10.009818	9.990182	45	27
34	30	9.322900	10.677100	9.332726	10.667274	10.009825	9.990175	30	26
35	45	9.323047	10.676953	9.332879	10.667121	10.009832	9.990168	15	25
36	9	9.323194	10.676806	9.333033	10.666967	10.009839	9.990161	51	24
37	15	9.323340	10.676660	9.333186	10.666814	10.009846	9.990154	45	23
38	30	9.323487	10.676513	9.333340	10.666660	10.009852	9.990148	30	22
39	45	9.323634	10.676366	9.333493	10.666507	10.009859	9.990141	15	21
40	10	9.323780	10.676220	9.333646	10.666354	10.009866	9.990134	50	20
41	15	9.323927	10.676073	9.333799	10.666201	10.009873	9.990127	45	19
42	30	9.324073	10.675927	9.333953	10.666047	10.009880	9.990120	30	18
43	45	9.324219	10.675781	9.334106	10.665894	10.009887	9.990113	15	17
44	11	9.324366	10.675634	9.334259	10.665741	10.009893	9.990107	49	16
45	15	9.324512	10.675488	9.334412	10.665588	10.009900	9.990100	45	15
46	30	9.324658	10.675342	9.334565	10.665435	10.009907	9.990093	30	14
47	45	9.324804	10.675196	9.334718	10.665282	10.009914	9.990086	15	13
48	12	9.324950	10.675050	9.334871	10.665129	10.009921	9.990079	48	12
49	15	9.325096	10.674904	9.335024	10.664976	10.009927	9.990073	45	11
50	30	9.325242	10.674758	9.335177	10.664823	10.009934	9.990066	30	10
51	45	9.325388	10.674612	9.335330	10.664670	10.009941	9.990059	15	9
52	13	9.325534	10.674466	9.335482	10.664518	10.009948	9.990052	47	8
53	15	9.325680	10.674320	9.335635	10.664365	10.009955	9.990045	45	7
54	30	9.325826	10.674174	9.335788	10.664212	10.009962	9.990038	30	6
55	45	9.325972	10.674028	9.335940	10.664060	10.009969	9.990031	15	5
56	14	9.326117	10.673883	9.336093	10.663907	10.009975	9.990025	46	4
57	15	9.326263	10.673737	9.336245	10.663755	10.009982	9.990018	45	3
58	30	9.326409	10.673591	9.336398	10.663602	10.009989	9.990011	30	2
59	45	9.326554	10.673446	9.336550	10.663450	10.009996	9.990004	15	1
60	15	9.326700	10.673300	9.336702	10.663298	10.010003	9.989997	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5° 11'.		LOG. SINES, &c.						77 deg.	

0 ^h 49 ^m .		LOG. SINRS, &c. (t.)						12 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.326700	10.673300	9.336702	10.663298	10.010003	9.989997	45	60
1	15	9.326845	10.673155	9.336855	10.663145	10.010010	9.989990	45	59
2	30	9.326990	10.673010	9.337007	10.662993	10.010016	9.989984	30	58
3	45	9.327136	10.672864	9.337159	10.662841	10.010023	9.989977	15	57
4	16	9.327281	10.672719	9.337311	10.662689	10.010030	9.989970	44	56
5	15	9.327426	10.672574	9.337463	10.662537	10.010037	9.989963	45	55
6	30	9.327571	10.672429	9.337615	10.662385	10.010044	9.989956	30	54
7	45	9.327717	10.672283	9.337767	10.662233	10.010051	9.989949	15	53
8	17	9.327862	10.672138	9.337919	10.662081	10.010058	9.989942	43	52
9	15	9.328007	10.671993	9.338071	10.661929	10.010065	9.989935	45	51
10	30	9.328152	10.671848	9.338223	10.661777	10.010071	9.989929	30	50
11	45	9.328297	10.671703	9.338375	10.661626	10.010078	9.989922	15	49
12	18	9.328442	10.671558	9.338527	10.661473	10.010085	9.989915	42	48
13	15	9.328586	10.671414	9.338678	10.661322	10.010092	9.989908	45	47
14	30	9.328731	10.671269	9.338830	10.661170	10.010099	9.989901	30	46
15	45	9.328876	10.671124	9.338982	10.661018	10.010106	9.989894	15	45
16	19	9.329021	10.670979	9.339133	10.660867	10.010113	9.989887	41	44
17	15	9.329165	10.670835	9.339285	10.660715	10.010120	9.989880	45	43
18	30	9.329310	10.670690	9.339436	10.660564	10.010127	9.989873	30	42
19	45	9.329454	10.670546	9.339588	10.660412	10.010133	9.989867	15	41
20	20	9.329599	10.670401	9.339739	10.660261	10.010140	9.989860	40	40
21	15	9.329743	10.670257	9.339890	10.660110	10.010147	9.989853	45	39
22	30	9.329887	10.670113	9.340042	10.659958	10.010154	9.989846	30	38
23	45	9.330032	10.669968	9.340193	10.659807	10.010161	9.989839	15	37
24	21	9.330176	10.669824	9.340344	10.659656	10.010168	9.989832	39	36
25	15	9.330320	10.669680	9.340495	10.659505	10.010175	9.989825	45	35
26	30	9.330464	10.669536	9.340646	10.659354	10.010182	9.989818	30	34
27	45	9.330609	10.669391	9.340797	10.659203	10.010189	9.989811	15	33
28	22	9.330753	10.669247	9.340948	10.659052	10.010196	9.989804	38	32
29	15	9.330897	10.669103	9.341099	10.658901	10.010203	9.989797	45	31
30	30	9.331041	10.668959	9.341250	10.658750	10.010210	9.989790	30	30
31	45	9.331185	10.668815	9.341401	10.658599	10.010216	9.989784	15	29
32	23	9.331328	10.668672	9.341552	10.658448	10.010223	9.989777	37	28
33	15	9.331472	10.668528	9.341703	10.658297	10.010230	9.989770	45	27
34	30	9.331616	10.668384	9.341853	10.658147	10.010237	9.989763	30	26
35	45	9.331760	10.668240	9.342004	10.657996	10.010244	9.989756	15	25
36	24	9.331903	10.668097	9.342155	10.657845	10.010251	9.989749	36	24
37	15	9.332047	10.667953	9.342305	10.657695	10.010258	9.989742	45	23
38	30	9.332191	10.667809	9.342456	10.657544	10.010265	9.989735	30	22
39	45	9.332334	10.667666	9.342606	10.657394	10.010272	9.989728	15	21
40	25	9.332478	10.667522	9.342757	10.657243	10.010279	9.989721	35	20
41	15	9.332621	10.667379	9.342907	10.657093	10.010286	9.989714	45	19
42	30	9.332764	10.667236	9.343057	10.656943	10.010293	9.989707	30	18
43	45	9.332908	10.667092	9.343208	10.656792	10.010300	9.989700	15	17
44	26	9.333051	10.666949	9.343358	10.656642	10.010307	9.989693	34	16
45	15	9.333194	10.666806	9.343508	10.656492	10.010314	9.989686	45	15
46	30	9.333337	10.666663	9.343658	10.656342	10.010321	9.989679	30	14
47	45	9.333481	10.666519	9.343808	10.656192	10.010328	9.989672	15	13
48	27	9.333624	10.666376	9.343958	10.656042	10.010335	9.989665	33	12
49	15	9.333767	10.666233	9.344108	10.655892	10.010342	9.989658	45	11
50	30	9.333910	10.666090	9.344258	10.655742	10.010349	9.989651	30	10
51	45	9.334053	10.665947	9.344408	10.655592	10.010356	9.989644	15	9
52	28	9.334195	10.665805	9.344558	10.655442	10.010363	9.989637	32	8
53	15	9.334338	10.665662	9.344708	10.655292	10.010370	9.989630	45	7
54	30	9.334481	10.665519	9.344858	10.655142	10.010377	9.989623	30	6
55	45	9.334624	10.665376	9.345007	10.654993	10.010384	9.989616	15	5
56	29	9.334766	10.665234	9.345157	10.654843	10.010391	9.989609	31	4
57	15	9.334909	10.665091	9.345307	10.654693	10.010398	9.989602	45	3
58	30	9.335052	10.664948	9.345456	10.654544	10.010405	9.989595	30	2
59	45	9.335194	10.664806	9.345606	10.654394	10.010412	9.989588	15	1
60	30	9.335337	10.664663	9.345755	10.654245	10.010419	9.989581	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5 ^h 10 ^m .		LOG. SINRS, &c.						77 deg.	

0° 50'		LOG. SINES, &c. (L)						12 deg.		
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.	
0	30	9.335337	10.664663	9.345755	10.654245	10.010419	9.989581	30	60	
1	15	9.335479	10.664521	9.345905	10.654095	10.010426	9.989574	45	59	
2	30	9.335622	10.664378	9.346054	10.653946	10.010433	9.989567	30	58	
3	45	9.335764	10.664236	9.346203	10.653797	10.010440	9.989560	15	57	
4	31	9.335906	10.664094	9.346353	10.653647	10.010447	9.989553	29	56	
5	15	9.336048	10.663952	9.346502	10.653498	10.010454	9.989546	45	55	
6	30	9.336191	10.663809	9.346651	10.653349	10.010461	9.989539	30	54	
7	45	9.336333	10.663667	9.346800	10.653200	10.010468	9.989532	15	53	
8	32	9.336475	10.663525	9.346949	10.653051	10.010475	9.989525	28	52	
9	15	9.336617	10.663383	9.347098	10.652902	10.010482	9.989518	45	51	
10	30	9.336759	10.663241	9.347247	10.652753	10.010489	9.989511	30	50	
11	45	9.336901	10.663099	9.347396	10.652604	10.010496	9.989504	15	49	
12	33	9.337043	10.662957	9.347545	10.652455	10.010503	9.989497	27	48	
13	15	9.337185	10.662815	9.347694	10.652306	10.010510	9.989490	45	47	
14	30	9.337327	10.662674	9.347843	10.652157	10.010517	9.989483	30	46	
15	45	9.337468	10.662532	9.347992	10.652008	10.010524	9.989476	15	45	
16	34	9.337610	10.662390	9.348141	10.651859	10.010531	9.989469	26	44	
17	15	9.337751	10.662249	9.348289	10.651711	10.010538	9.989462	45	43	
18	30	9.337893	10.662107	9.348438	10.651562	10.010545	9.989455	30	42	
19	45	9.338035	10.661965	9.348587	10.651413	10.010552	9.989448	15	41	
20	35	9.338176	10.661824	9.348735	10.651265	10.010559	9.989441	25	40	
21	15	9.338318	10.661682	9.348884	10.651116	10.010566	9.989434	45	39	
22	30	9.338459	10.661541	9.349032	10.650968	10.010573	9.989427	30	38	
23	45	9.338600	10.661400	9.349181	10.650819	10.010580	9.989420	15	37	
24	36	9.338742	10.661258	9.349329	10.650671	10.010587	9.989413	24	36	
25	15	9.338883	10.661117	9.349477	10.650523	10.010594	9.989406	45	35	
26	30	9.339024	10.660976	9.349626	10.650374	10.010601	9.989399	30	34	
27	45	9.339165	10.660835	9.349774	10.650226	10.010608	9.989392	15	33	
28	37	9.339306	10.660694	9.349922	10.650078	10.010616	9.989384	23	32	
29	15	9.339448	10.660552	9.350070	10.649930	10.010623	9.989377	45	31	
30	30	9.339589	10.660411	9.350218	10.649782	10.010630	9.989370	30	30	
31	45	9.339730	10.660270	9.350366	10.649634	10.010637	9.989363	15	29	
32	38	9.339871	10.660129	9.350514	10.649486	10.010644	9.989356	22	28	
33	15	9.340011	10.659989	9.350662	10.649338	10.010651	9.989349	45	27	
34	30	9.340152	10.659848	9.350810	10.649190	10.010658	9.989342	30	26	
35	45	9.340293	10.659707	9.350958	10.649042	10.010665	9.989335	15	25	
36	39	9.340434	10.659566	9.351106	10.648894	10.010672	9.989328	21	24	
37	15	9.340574	10.659426	9.351254	10.648746	10.010679	9.989321	45	23	
38	30	9.340715	10.659285	9.351401	10.648599	10.010686	9.989314	30	22	
39	45	9.340856	10.659144	9.351549	10.648451	10.010693	9.989307	15	21	
40	40	9.340996	10.659004	9.351697	10.648303	10.010701	9.989299	20	20	
41	15	9.341137	10.658863	9.351844	10.648156	10.010708	9.989292	45	19	
42	30	9.341277	10.658723	9.351992	10.648008	10.010715	9.989285	30	18	
43	45	9.341418	10.658582	9.352139	10.647861	10.010722	9.989278	15	17	
44	41	9.341558	10.658442	9.352287	10.647713	10.010729	9.989271	19	16	
45	15	9.341698	10.658302	9.352434	10.647566	10.010736	9.989264	45	15	
46	30	9.341839	10.658161	9.352582	10.647418	10.010743	9.989257	30	14	
47	45	9.341979	10.658021	9.352729	10.647271	10.010750	9.989250	15	13	
48	42	9.342119	10.657881	9.352876	10.647124	10.010757	9.989243	18	12	
49	15	9.342259	10.657741	9.353024	10.646976	10.010765	9.989235	45	11	
50	30	9.342399	10.657601	9.353171	10.646829	10.010772	9.989228	30	10	
51	45	9.342539	10.657461	9.353318	10.646682	10.010779	9.989221	15	9	
52	43	9.342679	10.657321	9.353465	10.646535	10.010786	9.989214	17	8	
53	15	9.342819	10.657181	9.353612	10.646388	10.010793	9.989207	45	7	
54	30	9.342959	10.657041	9.353759	10.646241	10.010800	9.989200	30	6	
55	45	9.343099	10.656901	9.353906	10.646094	10.010807	9.989193	15	5	
56	44	9.343239	10.656761	9.354053	10.645947	10.010814	9.989186	16	4	
57	15	9.343378	10.656622	9.354200	10.645800	10.010822	9.989178	45	3	
58	30	9.343518	10.656482	9.354347	10.645653	10.010829	9.989171	30	2	
59	45	9.343658	10.656342	9.354493	10.645507	10.010836	9.989164	15	1	
60	45	9.343797	10.656203	9.354640	10.645360	10.010843	9.989157	15	0	
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.	
5° 9'		LOG. SINES, &c.						77 deg.		

0 ^h 51 ^m .		LOG. SINES, &c. (L.)						12 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	45	9.343797	10.656203	9.354640	10.645360	10.010843	9.989157	15	60
1	15	9.343937	10.656063	9.354787	10.645213	10.010850	9.989150	45	59
2	30	9.344076	10.655924	9.354934	10.645066	10.010857	9.989143	30	58
3	45	9.344216	10.655784	9.355080	10.644920	10.010864	9.989136	15	57
4	46	9.344355	10.655645	9.355227	10.644773	10.010872	9.989128	14	56
5	15	9.344495	10.655505	9.355373	10.644627	10.010879	9.989121	45	55
6	30	9.344634	10.655366	9.355520	10.644480	10.010886	9.989114	30	54
7	45	9.344773	10.655227	9.355666	10.644334	10.010893	9.989107	15	53
8	47	9.344912	10.655088	9.355813	10.644187	10.010900	9.989100	13	52
9	15	9.345052	10.654948	9.355959	10.644041	10.010907	9.989093	45	51
10	30	9.345191	10.654809	9.356105	10.643895	10.010915	9.989085	30	50
11	45	9.345330	10.654670	9.356251	10.643749	10.010922	9.989078	15	49
12	48	9.345469	10.654531	9.356398	10.643602	10.010929	9.989071	12	48
13	15	9.345608	10.654392	9.356544	10.643456	10.010936	9.989064	45	47
14	30	9.345747	10.654253	9.356690	10.643310	10.010943	9.989057	30	46
15	45	9.345886	10.654114	9.356836	10.643164	10.010950	9.989050	15	45
16	49	9.346024	10.653976	9.356982	10.643018	10.010958	9.989042	11	44
17	15	9.346163	10.653837	9.357128	10.642872	10.010965	9.989035	45	43
18	30	9.346302	10.653698	9.357274	10.642726	10.010972	9.989028	30	42
19	45	9.346441	10.653559	9.357420	10.642580	10.010979	9.989021	15	41
20	50	9.346579	10.653421	9.357566	10.642434	10.010986	9.989014	10	40
21	15	9.346718	10.653282	9.357712	10.642288	10.010994	9.989006	45	39
22	30	9.346857	10.653143	9.357857	10.642143	10.011001	9.988999	30	38
23	45	9.346995	10.653005	9.358003	10.641997	10.011008	9.988992	15	37
24	51	9.347134	10.652866	9.358149	10.641851	10.011015	9.988985	9	36
25	15	9.347272	10.652728	9.358294	10.641706	10.011022	9.988978	45	35
26	30	9.347410	10.652590	9.358440	10.641560	10.011030	9.988970	30	34
27	45	9.347549	10.652451	9.358585	10.641415	10.011037	9.988963	15	33
28	52	9.347687	10.652313	9.358731	10.641269	10.011044	9.988956	8	32
29	15	9.347825	10.652175	9.358876	10.641124	10.011051	9.988949	45	31
30	30	9.347963	10.652037	9.359022	10.640978	10.011058	9.988942	30	30
31	45	9.348102	10.651898	9.359167	10.640833	10.011066	9.988934	15	29
32	53	9.348240	10.651760	9.359313	10.640687	10.011073	9.988927	7	28
33	15	9.348378	10.651622	9.359458	10.640542	10.011080	9.988920	45	27
34	30	9.348516	10.651484	9.359603	10.640397	10.011087	9.988913	30	26
35	45	9.348654	10.651346	9.359748	10.640252	10.011095	9.988905	15	25
36	54	9.348792	10.651208	9.359893	10.640107	10.011102	9.988898	6	24
37	15	9.348930	10.651070	9.360039	10.639961	10.011109	9.988891	45	23
38	30	9.349067	10.650933	9.360184	10.639816	10.011116	9.988884	30	22
39	45	9.349205	10.650795	9.360329	10.639671	10.011124	9.988876	15	21
40	55	9.349343	10.650657	9.360474	10.639526	10.011131	9.988869	5	20
41	15	9.349481	10.650519	9.360619	10.639381	10.011138	9.988862	45	19
42	30	9.349618	10.650382	9.360763	10.639237	10.011145	9.988855	30	18
43	45	9.349756	10.650244	9.360908	10.639092	10.011153	9.988847	15	17
44	56	9.349893	10.650107	9.361053	10.638947	10.011160	9.988840	4	16
45	15	9.350031	10.649969	9.361198	10.638802	10.011167	9.988833	45	15
46	30	9.350168	10.649832	9.361343	10.638657	10.011174	9.988826	30	14
47	45	9.350306	10.649694	9.361487	10.638513	10.011182	9.988818	15	13
48	57	9.350443	10.649557	9.361632	10.638368	10.011189	9.988811	3	12
49	15	9.350580	10.649420	9.361776	10.638224	10.011196	9.988804	45	11
50	30	9.350718	10.649282	9.361921	10.638079	10.011203	9.988797	30	10
51	45	9.350855	10.649145	9.362065	10.637935	10.011211	9.988789	15	9
52	58	9.350992	10.649008	9.362210	10.637790	10.011218	9.988782	2	8
53	15	9.351129	10.648871	9.362354	10.637646	10.011225	9.988775	45	7
54	30	9.351266	10.648734	9.362499	10.637501	10.011232	9.988768	30	6
55	45	9.351403	10.648597	9.362643	10.637357	10.011240	9.988760	15	5
56	59	9.351540	10.648460	9.362787	10.637213	10.011247	9.988753	1	4
57	15	9.351677	10.648323	9.362932	10.637068	10.011254	9.988746	45	3
58	30	9.351814	10.648186	9.363076	10.636924	10.011262	9.988738	30	2
59	45	9.351951	10.648049	9.363220	10.636780	10.011269	9.988731	15	1
60	60	9.352088	10.647912	9.363364	10.636636	10.011276	9.988724	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
5 ^h 5 ^m .		LOG. SINES, &c.						77 deg.	

0° 52'		LOG. SINES, &c. (L.)						13 deg.	
		sine.	cosecant.	tangent.	cotangent.	secant.	cosec.		sec.
0	0	9.352088	10.647912	9.363364	10.636636	10.011276	9.988724	60	60
1	15	9.352225	10.647775	9.363508	10.636492	10.011283	9.988717	45	59
2	30	9.352361	10.647639	9.363652	10.636348	10.011291	9.988709	30	58
3	45	9.352498	10.647502	9.363796	10.636204	10.011298	9.988702	15	57
4	1	9.352635	10.647365	9.363940	10.636060	10.011305	9.988695	59	56
5	15	9.352771	10.647229	9.364084	10.635916	10.011313	9.988687	45	55
6	30	9.352908	10.647092	9.364228	10.635772	10.011320	9.988680	30	54
7	45	9.353044	10.646956	9.364372	10.635628	10.011327	9.988673	15	53
8	2	9.353181	10.646819	9.364515	10.635485	10.011335	9.988665	58	52
9	15	9.353317	10.646683	9.364659	10.635341	10.011342	9.988658	45	51
10	30	9.353454	10.646546	9.364803	10.635197	10.011349	9.988651	30	50
11	45	9.353590	10.646410	9.364946	10.635054	10.011356	9.988644	15	49
12	3	9.353726	10.646274	9.365090	10.634910	10.011364	9.988636	57	48
13	15	9.353863	10.646137	9.365234	10.634766	10.011371	9.988629	45	47
14	30	9.353999	10.646001	9.365377	10.634623	10.011378	9.988622	30	46
15	45	9.354135	10.645865	9.365521	10.634479	10.011386	9.988614	15	45
16	4	9.354271	10.645729	9.365664	10.634336	10.011393	9.988607	56	44
17	15	9.354407	10.645593	9.365807	10.634193	10.011400	9.988600	45	43
18	30	9.354543	10.645457	9.365951	10.634049	10.011408	9.988592	30	42
19	45	9.354679	10.645321	9.366094	10.633906	10.011415	9.988585	15	41
20	5	9.354815	10.645185	9.366237	10.633763	10.011422	9.988578	55	40
21	15	9.354951	10.645049	9.366381	10.633619	10.011430	9.988570	45	39
22	30	9.355087	10.644913	9.366524	10.633476	10.011437	9.988563	30	38
23	45	9.355222	10.644778	9.366667	10.633333	10.011444	9.988556	15	37
24	6	9.355358	10.644642	9.366810	10.633190	10.011452	9.988548	54	36
25	15	9.355494	10.644506	9.366953	10.633047	10.011459	9.988541	45	35
26	30	9.355630	10.644370	9.367096	10.632904	10.011467	9.988533	30	34
27	45	9.355765	10.644235	9.367239	10.632761	10.011474	9.988526	15	33
28	7	9.355901	10.644099	9.367382	10.632618	10.011481	9.988519	53	32
29	15	9.356036	10.643964	9.367525	10.632475	10.011489	9.988511	45	31
30	30	9.356172	10.643828	9.367668	10.632332	10.011496	9.988504	30	30
31	45	9.356307	10.643693	9.367810	10.632190	10.011503	9.988497	15	29
32	8	9.356443	10.643557	9.367953	10.632047	10.011511	9.988489	52	28
33	15	9.356578	10.643422	9.368096	10.631904	10.011518	9.988482	45	27
34	30	9.356713	10.643287	9.368239	10.631761	10.011525	9.988475	30	26
35	45	9.356848	10.643152	9.368381	10.631619	10.011533	9.988467	15	25
36	9	9.356984	10.643016	9.368524	10.631476	10.011540	9.988460	51	24
37	15	9.357119	10.642881	9.368666	10.631334	10.011548	9.988452	45	23
38	30	9.357254	10.642746	9.368809	10.631191	10.011555	9.988445	30	22
39	45	9.357389	10.642611	9.368951	10.631049	10.011562	9.988438	15	21
40	10	9.357524	10.642476	9.369094	10.630906	10.011570	9.988430	50	20
41	15	9.357659	10.642341	9.369236	10.630764	10.011577	9.988423	45	19
42	30	9.357794	10.642206	9.369378	10.630622	10.011584	9.988416	30	18
43	45	9.357929	10.642071	9.369521	10.630479	10.011592	9.988408	15	17
44	11	9.358064	10.641936	9.369663	10.630337	10.011599	9.988401	49	16
45	15	9.358198	10.641802	9.369805	10.630195	10.011607	9.988393	45	15
46	30	9.358333	10.641667	9.369947	10.630053	10.011614	9.988386	30	14
47	45	9.358468	10.641532	9.370089	10.629911	10.011621	9.988379	15	13
48	12	9.358603	10.641397	9.370231	10.629769	10.011629	9.988371	48	12
49	15	9.358737	10.641263	9.370374	10.629626	10.011636	9.988364	45	11
50	30	9.358872	10.641128	9.370516	10.629484	10.011644	9.988356	30	10
51	45	9.359006	10.640994	9.370657	10.629343	10.011651	9.988349	15	9
52	13	9.359141	10.640859	9.370799	10.629201	10.011659	9.988341	47	8
53	15	9.359275	10.640725	9.370941	10.629059	10.011666	9.988334	45	7
54	30	9.359410	10.640590	9.371083	10.628917	10.011673	9.988327	30	6
55	45	9.359544	10.640456	9.371225	10.628775	10.011681	9.988319	15	5
56	14	9.359678	10.640322	9.371367	10.628633	10.011688	9.988312	46	4
57	15	9.359813	10.640187	9.371508	10.628492	10.011696	9.988304	45	3
58	30	9.359947	10.640053	9.371650	10.628350	10.011703	9.988297	30	2
59	45	9.360081	10.639919	9.371792	10.628208	10.011711	9.988289	15	1
60	15	9.360215	10.639785	9.371933	10.628067	10.011718	9.988282	45	0
sec.		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
5° 7'		LOG. SINES, &c.						76 deg.	

0 ^h 53 ^m .		LOG. SINES, &c. (t)						13 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec
0	15	9.360215	10.639785	9.371933	10.628067	10.011718	9.988282	45	60
1	15	9.360349	10.639651	9.372075	10.627925	10.011725	9.988275	45	59
2	30	9.360483	10.639517	9.372216	10.627784	10.011733	9.988267	30	58
3	45	9.360617	10.639383	9.372358	10.627642	10.011740	9.988260	15	57
4	16	9.360751	10.639249	9.372499	10.627501	10.011748	9.988252	44	56
5	15	9.360885	10.639115	9.372641	10.627359	10.011755	9.988245	45	55
6	30	9.361019	10.638981	9.372782	10.627218	10.011763	9.988237	30	54
7	45	9.361153	10.638847	9.372923	10.627077	10.011770	9.988230	15	53
8	17	9.361287	10.638713	9.373064	10.626936	10.011778	9.988222	43	52
9	15	9.361421	10.638579	9.373206	10.626794	10.011785	9.988215	45	51
10	30	9.361554	10.638446	9.373347	10.626653	10.011792	9.988208	30	50
11	45	9.361688	10.638312	9.373488	10.626512	10.011800	9.988200	15	49
12	18	9.361822	10.638178	9.373629	10.626371	10.011807	9.988193	42	48
13	15	9.361955	10.638045	9.373770	10.626230	10.011815	9.988185	45	47
14	30	9.362089	10.637911	9.373911	10.626089	10.011822	9.988178	30	46
15	45	9.362222	10.637778	9.374052	10.625948	10.011830	9.988170	15	45
16	19	9.362356	10.637644	9.374193	10.625807	10.011837	9.988163	41	44
17	15	9.362489	10.637511	9.374334	10.625666	10.011845	9.988155	45	43
18	30	9.362623	10.637377	9.374475	10.625525	10.011852	9.988148	30	42
19	45	9.362756	10.637244	9.374616	10.625384	10.011860	9.988140	15	41
20	20	9.362889	10.637111	9.374756	10.625244	10.011867	9.988133	40	40
21	15	9.363022	10.636978	9.374897	10.625103	10.011875	9.988125	45	39
22	30	9.363156	10.636844	9.375038	10.624962	10.011882	9.988118	30	38
23	45	9.363289	10.636711	9.375178	10.624822	10.011890	9.988110	15	37
24	21	9.363422	10.636578	9.375319	10.624681	10.011897	9.988103	39	36
25	15	9.363555	10.636445	9.375459	10.624541	10.011905	9.988095	45	35
26	30	9.363688	10.636312	9.375600	10.624400	10.011912	9.988088	30	34
27	45	9.363821	10.636179	9.375740	10.624260	10.011920	9.988080	15	33
28	22	9.363954	10.636046	9.375881	10.624119	10.011927	9.988073	38	32
29	15	9.364087	10.635913	9.376021	10.623979	10.011935	9.988065	45	31
30	30	9.364220	10.635780	9.376162	10.623838	10.011942	9.988058	30	30
31	45	9.364352	10.635648	9.376302	10.623698	10.011950	9.988050	15	29
32	23	9.364485	10.635515	9.376442	10.623558	10.011957	9.988043	37	28
33	15	9.364618	10.635382	9.376583	10.623417	10.011965	9.988035	45	27
34	30	9.364751	10.635249	9.376723	10.623277	10.011972	9.988028	30	26
35	45	9.364883	10.635117	9.376863	10.623137	10.011980	9.988020	15	25
36	24	9.365016	10.634984	9.377003	10.622997	10.011987	9.988013	36	24
37	15	9.365148	10.634852	9.377143	10.622857	10.011995	9.988005	45	23
38	30	9.365281	10.634719	9.377283	10.622717	10.012002	9.987998	30	22
39	45	9.365413	10.634587	9.377423	10.622577	10.012010	9.987990	15	21
40	25	9.365546	10.634454	9.377563	10.622437	10.012017	9.987983	35	20
41	15	9.365678	10.634322	9.377703	10.622297	10.012025	9.987975	45	19
42	30	9.365810	10.634190	9.377843	10.622157	10.012032	9.987968	30	18
43	45	9.365943	10.634057	9.377983	10.622017	10.012040	9.987960	15	17
44	26	9.366075	10.633925	9.378122	10.621878	10.012048	9.987952	34	16
45	15	9.366207	10.633793	9.378262	10.621738	10.012055	9.987945	45	15
46	30	9.366339	10.633661	9.378402	10.621598	10.012063	9.987937	30	14
47	45	9.366471	10.633529	9.378542	10.621458	10.012070	9.987930	15	13
48	27	9.366604	10.633396	9.378681	10.621319	10.012078	9.987922	33	12
49	15	9.366736	10.633264	9.378821	10.621179	10.012085	9.987915	45	11
50	30	9.366868	10.633132	9.378960	10.621040	10.012093	9.987907	30	10
51	45	9.367000	10.633000	9.379100	10.620900	10.012100	9.987900	15	9
52	28	9.367131	10.632869	9.379239	10.620761	10.012108	9.987892	32	8
53	15	9.367263	10.632737	9.379379	10.620621	10.012116	9.987884	45	7
54	30	9.367395	10.632605	9.379518	10.620482	10.012123	9.987877	30	6
55	45	9.367527	10.632473	9.379658	10.620342	10.012131	9.987869	15	5
56	29	9.367659	10.632341	9.379797	10.620203	10.012138	9.987862	31	4
57	15	9.367790	10.632210	9.379936	10.620064	10.012146	9.987854	45	3
58	30	9.367922	10.632078	9.380075	10.619925	10.012153	9.987847	30	2
59	45	9.368054	10.631946	9.380215	10.619785	10.012161	9.987839	15	1
60	30	9.368185	10.631815	9.380354	10.619646	10.012169	9.987831	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine	"	sec
5 ^h 5 ^m .		LOG. SINES, &c.						76 deg.	

0° 54'.		LOG. SINES, &c. (t.)						13 deg.	
sec.	'	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	'	sec.
0	30	9.368185	10.631815	9.380354	10.619646	10.012169	9.987831	30	60
1	15	9.368317	10.631683	9.380493	10.619507	10.012176	9.987824	45	59
2	30	9.368448	10.631552	9.380632	10.619368	10.012184	9.987816	30	58
3	45	9.368580	10.631420	9.380771	10.619229	10.012191	9.987809	15	57
4	31	9.368711	10.631289	9.380910	10.619090	10.012199	9.987801	29	56
5	15	9.368842	10.631158	9.381049	10.618951	10.012206	9.987794	45	55
6	30	9.368974	10.631026	9.381188	10.618812	10.012214	9.987786	30	54
7	45	9.369105	10.630895	9.381327	10.618673	10.012222	9.987778	15	53
8	32	9.369236	10.630764	9.381465	10.618535	10.012229	9.987771	28	52
9	15	9.369367	10.630633	9.381604	10.618396	10.012237	9.987763	45	51
10	30	9.369499	10.630501	9.381743	10.618257	10.012244	9.987756	30	50
11	45	9.369630	10.630370	9.381882	10.618118	10.012252	9.987748	15	49
12	33	9.369761	10.630239	9.382020	10.617980	10.012260	9.987740	27	48
13	15	9.369892	10.630108	9.382159	10.617841	10.012267	9.987733	45	47
14	30	9.370023	10.629977	9.382298	10.617702	10.012275	9.987725	30	46
15	45	9.370154	10.629846	9.382436	10.617564	10.012283	9.987717	15	45
16	34	9.370285	10.629715	9.382575	10.617425	10.012290	9.987710	26	44
17	15	9.370416	10.629584	9.382713	10.617287	10.012298	9.987702	45	43
18	30	9.370546	10.629454	9.382852	10.617148	10.012305	9.987695	30	42
19	45	9.370677	10.629323	9.382990	10.617010	10.012313	9.987687	15	41
20	35	9.370808	10.629192	9.383128	10.616872	10.012321	9.987679	25	40
21	15	9.370939	10.629061	9.383267	10.616733	10.012328	9.987672	45	39
22	30	9.371069	10.628931	9.383405	10.616595	10.012336	9.987664	30	38
23	45	9.371200	10.628800	9.383543	10.616457	10.012344	9.987656	15	37
24	36	9.371330	10.628670	9.383682	10.616318	10.012351	9.987649	24	36
25	15	9.371461	10.628539	9.383820	10.616180	10.012359	9.987641	45	35
26	30	9.371591	10.628409	9.383958	10.616042	10.012366	9.987634	30	34
27	45	9.371722	10.628278	9.384096	10.615904	10.012374	9.987626	15	33
28	37	9.371852	10.628148	9.384234	10.615766	10.012382	9.987619	23	32
29	15	9.371983	10.628017	9.384372	10.615628	10.012389	9.987611	45	31
30	30	9.372113	10.627887	9.384510	10.615490	10.012397	9.987603	30	30
31	45	9.372243	10.627757	9.384648	10.615352	10.012405	9.987595	15	29
32	38	9.372373	10.627627	9.384786	10.615214	10.012412	9.987588	22	28
33	15	9.372504	10.627496	9.384924	10.615076	10.012420	9.987580	45	27
34	30	9.372634	10.627366	9.385061	10.614939	10.012428	9.987572	30	26
35	45	9.372764	10.627236	9.385199	10.614801	10.012435	9.987565	15	25
36	39	9.372894	10.627106	9.385337	10.614663	10.012443	9.987557	21	24
37	15	9.373024	10.626976	9.385475	10.614525	10.012451	9.987549	45	23
38	30	9.373154	10.626846	9.385612	10.614388	10.012458	9.987542	30	22
39	45	9.373284	10.626716	9.385750	10.614250	10.012466	9.987534	15	21
40	40	9.373414	10.626586	9.385888	10.614112	10.012474	9.987526	20	20
41	15	9.373544	10.626456	9.386025	10.613975	10.012481	9.987519	45	19
42	30	9.373674	10.626326	9.386163	10.613837	10.012489	9.987511	30	18
43	45	9.373803	10.626197	9.386300	10.613700	10.012497	9.987503	15	17
44	41	9.373933	10.626067	9.386438	10.613562	10.012505	9.987495	19	16
45	15	9.374063	10.625937	9.386575	10.613425	10.012512	9.987488	45	15
46	30	9.374192	10.625808	9.386712	10.613288	10.012520	9.987480	30	14
47	45	9.374322	10.625678	9.386850	10.613150	10.012528	9.987472	15	13
48	42	9.374452	10.625548	9.386987	10.613013	10.012535	9.987465	18	12
49	15	9.374581	10.625419	9.387124	10.612876	10.012543	9.987457	45	11
50	30	9.374711	10.625289	9.387261	10.612739	10.012551	9.987449	30	10
51	45	9.374840	10.625160	9.387398	10.612602	10.012558	9.987442	15	9
52	43	9.374970	10.625030	9.387536	10.612464	10.012566	9.987434	17	8
53	15	9.375099	10.624901	9.387673	10.612327	10.012574	9.987426	45	7
54	30	9.375228	10.624772	9.387810	10.612190	10.012582	9.987418	30	6
55	45	9.375358	10.624642	9.387947	10.612053	10.012589	9.987411	15	5
56	44	9.375487	10.624513	9.388084	10.611916	10.012597	9.987403	16	4
57	15	9.375616	10.624384	9.388221	10.611779	10.012605	9.987395	45	3
58	30	9.375745	10.624255	9.388357	10.611643	10.012612	9.987388	30	2
59	45	9.375874	10.624126	9.388494	10.611506	10.012620	9.987380	15	1
60	45	9.376003	10.623997	9.388631	10.611369	10.012628	9.987372	15	0
sec.	'	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	'	sec.
5° 54'.		LOG. SINES, &c.						76 deg.	

0 ^h 55 ^m .				LOG. SINES, &c. (1)				13 deg.			
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	"	"	sec.	"
0	45	9.376003	10.623997	9.388631	10.611369	10.012628	9.987372	15	60		
1	15	9.376132	10.623868	9.388768	10.611232	10.012636	9.987364	45	59		
2	30	9.376261	10.623739	9.388905	10.611095	10.012643	9.987357	30	58		
3	45	9.376390	10.623610	9.389041	10.610959	10.012651	9.987349	15	57		
4	46	9.376519	10.623481	9.389178	10.610822	10.012659	9.987341	14	56		
5	15	9.376648	10.623352	9.389315	10.610685	10.012667	9.987333	45	55		
6	30	9.376777	10.623223	9.389451	10.610549	10.012674	9.987326	30	54		
7	45	9.376906	10.623094	9.389588	10.610412	10.012682	9.987318	15	53		
8	47	9.377035	10.622965	9.389724	10.610276	10.012690	9.987310	13	52		
9	15	9.377163	10.622837	9.389861	10.610139	10.012698	9.987302	45	51		
10	30	9.377292	10.622708	9.389997	10.610003	10.012705	9.987295	30	50		
11	45	9.377421	10.622579	9.390134	10.609866	10.012713	9.987287	15	49		
12	48	9.377549	10.622451	9.390270	10.609730	10.012721	9.987279	12	48		
13	15	9.377678	10.622322	9.390406	10.609594	10.012729	9.987271	45	47		
14	30	9.377806	10.622194	9.390543	10.609457	10.012736	9.987264	30	46		
15	45	9.377935	10.622065	9.390679	10.609321	10.012744	9.987256	15	45		
16	49	9.378063	10.621937	9.390815	10.609185	10.012752	9.987248	11	44		
17	15	9.378192	10.621808	9.390951	10.609049	10.012760	9.987240	45	43		
18	30	9.378321	10.621680	9.391087	10.608913	10.012767	9.987233	30	42		
19	45	9.378448	10.621552	9.391223	10.608777	10.012775	9.987225	15	41		
20	50	9.378577	10.621423	9.391359	10.608641	10.012783	9.987217	10	40		
21	15	9.378705	10.621295	9.391495	10.608505	10.012791	9.987209	45	39		
22	30	9.378833	10.621167	9.391631	10.608369	10.012798	9.987202	30	38		
23	45	9.378961	10.621039	9.391767	10.608233	10.012806	9.987194	15	37		
24	51	9.379089	10.620911	9.391903	10.608097	10.012814	9.987186	9	36		
25	15	9.379217	10.620783	9.392039	10.607961	10.012822	9.987178	45	35		
26	30	9.379345	10.620655	9.392175	10.607825	10.012830	9.987170	30	34		
27	45	9.379473	10.620527	9.392311	10.607689	10.012837	9.987163	15	33		
28	52	9.379601	10.620399	9.392447	10.607553	10.012845	9.987155	8	32		
29	15	9.379729	10.620271	9.392582	10.607418	10.012853	9.987147	45	31		
30	30	9.379857	10.620143	9.392718	10.607282	10.012861	9.987139	30	30		
31	45	9.379985	10.620015	9.392854	10.607146	10.012869	9.987131	15	29		
32	53	9.380113	10.619887	9.392989	10.607011	10.012876	9.987124	7	28		
33	15	9.380241	10.619759	9.393125	10.606875	10.012884	9.987116	45	27		
34	30	9.380368	10.619632	9.393260	10.606740	10.012892	9.987108	30	26		
35	45	9.380496	10.619504	9.393396	10.606604	10.012900	9.987100	15	25		
36	54	9.380624	10.619376	9.393531	10.606469	10.012908	9.987092	6	24		
37	15	9.380751	10.619249	9.393667	10.606333	10.012915	9.987085	45	23		
38	30	9.380879	10.619121	9.393802	10.606198	10.012923	9.987077	30	22		
39	45	9.381006	10.618994	9.393937	10.606063	10.012931	9.987069	15	21		
40	55	9.381134	10.618866	9.394073	10.605927	10.012939	9.987061	5	20		
41	15	9.381261	10.618739	9.394208	10.605792	10.012947	9.987053	45	19		
42	30	9.381389	10.618611	9.394343	10.605657	10.012955	9.987045	30	18		
43	45	9.381516	10.618484	9.394478	10.605522	10.012962	9.987038	15	17		
44	56	9.381643	10.618357	9.394614	10.605386	10.012970	9.987030	4	16		
45	15	9.381771	10.618229	9.394749	10.605251	10.012978	9.987022	45	15		
46	30	9.381898	10.618102	9.394884	10.605116	10.012986	9.987014	30	14		
47	45	9.382025	10.617975	9.395019	10.604981	10.012994	9.987006	15	13		
48	57	9.382152	10.617848	9.395154	10.604846	10.013002	9.986998	3	12		
49	15	9.382279	10.617721	9.395289	10.604711	10.013009	9.986991	45	11		
50	30	9.382406	10.617594	9.395424	10.604576	10.013017	9.986983	30	10		
51	45	9.382533	10.617467	9.395559	10.604441	10.013025	9.986975	15	9		
52	58	9.382660	10.617340	9.395693	10.604307	10.013033	9.986967	2	8		
53	15	9.382787	10.617213	9.395828	10.604172	10.013041	9.986959	45	7		
54	30	9.382914	10.617086	9.395963	10.604037	10.013049	9.986951	30	6		
55	45	9.383041	10.616959	9.396098	10.603902	10.013057	9.986943	15	5		
56	59	9.383168	10.616832	9.396233	10.603767	10.013064	9.986936	1	4		
57	15	9.383295	10.616705	9.396367	10.603633	10.013072	9.986928	45	3		
58	30	9.383422	10.616578	9.396502	10.603498	10.013080	9.986920	30	2		
59	45	9.383549	10.616452	9.396636	10.603364	10.013088	9.986912	15	1		
60	60	9.383675	10.616325	9.396771	10.603229	10.013096	9.986904	0	0		
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"	sec.	"
5 ^h 4 ^m .				LOG. SINES, &c.				76 deg.			

0° 56".		LOG. SINES, &c. (t.)					14 deg.	
		sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	sec.
0		9.383675	10.616325	9.396771	10.603229	10.013096	9.986904	60
15		9.383802	10.616198	9.396906	10.603094	10.013104	9.986896	45
30		9.383928	10.616072	9.397040	10.602960	10.013112	9.986888	30
45		9.384055	10.615945	9.397174	10.602826	10.013120	9.986880	15
1		9.384181	10.615819	9.397309	10.602691	10.013127	9.986873	59
15		9.384309	10.615692	9.397443	10.602557	10.013135	9.986865	45
30		9.384434	10.615566	9.397578	10.602422	10.013143	9.986857	30
45		9.384561	10.615439	9.397712	10.602288	10.013151	9.986849	15
2		9.384687	10.615313	9.397846	10.602154	10.013159	9.986841	58
15		9.384814	10.615186	9.397980	10.602020	10.013167	9.986833	45
30		9.384940	10.615060	9.398115	10.601885	10.013175	9.986825	30
45		9.385066	10.614934	9.398249	10.601753	10.013183	9.986817	15
3		9.385192	10.614808	9.398383	10.601617	10.013191	9.986809	57
15		9.385319	10.614681	9.398517	10.601483	10.013199	9.986801	45
30		9.385445	10.614555	9.398651	10.601349	10.013206	9.986793	30
45		9.385571	10.614429	9.398785	10.601215	10.013214	9.986786	15
4		9.385697	10.614303	9.398919	10.601081	10.013222	9.986778	56
15		9.385823	10.614177	9.399053	10.600947	10.013230	9.986770	45
30		9.385949	10.614051	9.399187	10.600813	10.013238	9.986762	30
45		9.386075	10.613925	9.399321	10.600679	10.013246	9.986754	15
5		9.386201	10.613799	9.399455	10.600545	10.013254	9.986746	55
15		9.386327	10.613673	9.399589	10.600412	10.013262	9.986738	45
30		9.386452	10.613548	9.399722	10.600278	10.013270	9.986730	30
45		9.386578	10.613422	9.399856	10.600144	10.013278	9.986722	15
6		9.386704	10.613296	9.399990	10.600010	10.013286	9.986714	54
15		9.386830	10.613170	9.400123	10.599877	10.013294	9.986706	45
30		9.386955	10.613045	9.400257	10.599743	10.013301	9.986699	30
45		9.387081	10.612919	9.400390	10.599610	10.013309	9.986691	15
7		9.387207	10.612793	9.400524	10.599476	10.013317	9.986683	53
15		9.387332	10.612668	9.400657	10.599343	10.013325	9.986675	45
30		9.387458	10.612542	9.400791	10.599209	10.013333	9.986667	30
45		9.387583	10.612417	9.400924	10.599076	10.013341	9.986659	15
8		9.387709	10.612291	9.401058	10.598942	10.013349	9.986651	52
15		9.387834	10.612166	9.401191	10.598809	10.013357	9.986643	45
30		9.387959	10.612041	9.401324	10.598676	10.013365	9.986635	30
45		9.388085	10.611915	9.401458	10.598542	10.013373	9.986627	15
9		9.388210	10.611790	9.401591	10.598409	10.013381	9.986619	51
15		9.388335	10.611665	9.401724	10.598276	10.013389	9.986611	45
30		9.388461	10.611539	9.401857	10.598143	10.013397	9.986603	30
45		9.388586	10.611414	9.401991	10.598009	10.013405	9.986595	15
10		9.388711	10.611289	9.402124	10.597876	10.013413	9.986587	50
15		9.388836	10.611164	9.402257	10.597743	10.013421	9.986579	45
30		9.388961	10.611039	9.402390	10.597610	10.013429	9.986571	30
45		9.389086	10.610914	9.402523	10.597477	10.013437	9.986563	15
11		9.389211	10.610789	9.402656	10.597344	10.013445	9.986555	49
15		9.389336	10.610664	9.402789	10.597211	10.013453	9.986547	45
30		9.389461	10.610539	9.402922	10.597078	10.013461	9.986539	30
45		9.389586	10.610414	9.403054	10.596946	10.013469	9.986531	15
12		9.389711	10.610289	9.403187	10.596813	10.013477	9.986523	48
15		9.389835	10.610165	9.403320	10.596680	10.013485	9.986515	45
30		9.389960	10.610040	9.403453	10.596547	10.013493	9.986507	30
45		9.390085	10.609915	9.403585	10.596415	10.013501	9.986499	15
13		9.390210	10.609790	9.403718	10.596282	10.013509	9.986491	47
15		9.390334	10.609666	9.403851	10.596149	10.013517	9.986483	45
30		9.390459	10.609541	9.403983	10.596017	10.013525	9.986475	30
45		9.390583	10.609417	9.404116	10.595884	10.013533	9.986467	15
14		9.390708	10.609292	9.404249	10.595751	10.013541	9.986459	46
15		9.390832	10.609168	9.404381	10.595619	10.013549	9.986451	45
30		9.390957	10.609043	9.404514	10.595486	10.013557	9.986443	30
45		9.391081	10.608919	9.404646	10.595354	10.013565	9.986435	15
15		9.391206	10.608794	9.404778	10.595222	10.013573	9.986427	45
		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	sec.
5° 3".		LOG. SINES, &c.					75 deg.	

0° 57'		LOG. SINES, &c. (t.)						14 deg.
sec.	'	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	'
0	15	9.391206	10.608794	9.404778	10.595222	10.013573	9.986427	45
1	15	9.391330	10.608670	9.404911	10.595089	10.013581	9.986419	45
2	30	9.391454	10.608546	9.405043	10.594957	10.013589	9.986411	30
3	45	9.391579	10.608421	9.405175	10.594825	10.013597	9.986403	15
4	16	9.391703	10.608297	9.405308	10.594692	10.013605	9.986395	44
5	15	9.391827	10.608173	9.405440	10.594560	10.013613	9.986387	45
6	30	9.391951	10.608049	9.405572	10.594428	10.013621	9.986379	30
7	45	9.392075	10.607925	9.405704	10.594296	10.013629	9.986371	15
8	17	9.392199	10.607801	9.405836	10.594164	10.013637	9.986363	43
9	15	9.392323	10.607677	9.405968	10.594032	10.013645	9.986355	45
10	30	9.392447	10.607553	9.406100	10.593900	10.013653	9.986347	30
11	45	9.392571	10.607429	9.406232	10.593768	10.013661	9.986339	15
12	18	9.392695	10.607305	9.406364	10.593636	10.013669	9.986331	42
13	15	9.392819	10.607181	9.406496	10.593504	10.013677	9.986323	45
14	30	9.392943	10.607057	9.406628	10.593372	10.013685	9.986315	30
15	45	9.393067	10.606933	9.406760	10.593240	10.013693	9.986307	15
16	19	9.393190	10.606810	9.406892	10.593108	10.013701	9.986299	41
17	15	9.393314	10.606686	9.407024	10.592976	10.013710	9.986290	45
18	30	9.393438	10.606562	9.407155	10.592845	10.013718	9.986282	30
19	45	9.393562	10.606438	9.407287	10.592713	10.013726	9.986274	15
20	20	9.393685	10.606315	9.407419	10.592581	10.013734	9.986266	40
21	15	9.393809	10.606191	9.407551	10.592449	10.013742	9.986258	45
22	30	9.393932	10.606068	9.407682	10.592318	10.013750	9.986250	30
23	45	9.394056	10.605944	9.407814	10.592186	10.013758	9.986242	15
24	21	9.394179	10.605821	9.407945	10.592055	10.013766	9.986234	39
25	15	9.394303	10.605697	9.408077	10.591923	10.013774	9.986226	45
26	30	9.394426	10.605574	9.408208	10.591792	10.013782	9.986218	30
27	45	9.394550	10.605450	9.408340	10.591660	10.013790	9.986210	15
28	22	9.394673	10.605327	9.408471	10.591529	10.013798	9.986202	38
29	15	9.394796	10.605204	9.408602	10.591398	10.013806	9.986194	45
30	30	9.394919	10.605081	9.408734	10.591266	10.013815	9.986185	30
31	45	9.395043	10.604957	9.408865	10.591135	10.013823	9.986177	15
32	23	9.395166	10.604834	9.408996	10.591004	10.013831	9.986169	37
33	15	9.395289	10.604711	9.409128	10.590872	10.013839	9.986161	45
34	30	9.395412	10.604588	9.409259	10.590741	10.013847	9.986153	30
35	45	9.395535	10.604465	9.409390	10.590610	10.013855	9.986145	15
36	24	9.395658	10.604342	9.409521	10.590479	10.013863	9.986137	36
37	15	9.395781	10.604219	9.409652	10.590348	10.013871	9.986129	45
38	30	9.395904	10.604096	9.409783	10.590217	10.013879	9.986121	30
39	45	9.396027	10.603973	9.409914	10.590086	10.013887	9.986113	15
40	25	9.396150	10.603850	9.410045	10.589955	10.013896	9.986104	35
41	15	9.396273	10.603727	9.410176	10.589824	10.013904	9.986096	45
42	30	9.396395	10.603605	9.410307	10.589693	10.013912	9.986088	30
43	45	9.396518	10.603482	9.410438	10.589562	10.013920	9.986080	15
44	26	9.396641	10.603359	9.410569	10.589431	10.013928	9.986072	34
45	15	9.396764	10.603236	9.410700	10.589300	10.013936	9.986064	45
46	30	9.396886	10.603114	9.410831	10.589169	10.013944	9.986056	30
47	45	9.397009	10.602991	9.410961	10.589039	10.013952	9.986048	15
48	27	9.397131	10.602869	9.411092	10.588908	10.013961	9.986039	33
49	15	9.397254	10.602746	9.411223	10.588777	10.013969	9.986031	45
50	30	9.397377	10.602623	9.411353	10.588647	10.013977	9.986023	30
51	45	9.397499	10.602501	9.411484	10.588516	10.013985	9.986015	15
52	28	9.397621	10.602379	9.411615	10.588385	10.013993	9.986007	32
53	15	9.397744	10.602256	9.411745	10.588255	10.014001	9.985999	45
54	30	9.397866	10.602134	9.411876	10.588124	10.014009	9.985991	30
55	45	9.397989	10.602011	9.412006	10.587994	10.014018	9.985982	15
56	29	9.398111	10.601889	9.412137	10.587863	10.014026	9.985974	31
57	15	9.398233	10.601767	9.412267	10.587733	10.014034	9.985966	45
58	30	9.398355	10.601645	9.412397	10.587603	10.014042	9.985958	30
59	45	9.398477	10.601523	9.412528	10.587472	10.014050	9.985950	15
60	30	9.398600	10.601400	9.412658	10.587342	10.014058	9.985942	30
sec.	'	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	'
5° 2'		LOG. SINES, &c.						75 deg.

0° 58'.			LOG. SINES, &c. (t.)					14 deg.		
sec.	' "	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	' "	sec.	
0	30	9.398600	10.601400	9.412658	10.587342	10.014058	9.985942	30	60	
1	15	9.398722	10.601278	9.412788	10.587212	10.014067	9.985933	45	59	
2	30	9.398844	10.601156	9.412919	10.587081	10.014075	9.985925	30	58	
3	45	9.398966	10.601034	9.413049	10.586951	10.014083	9.985917	15	57	
4	31	9.399088	10.600912	9.413179	10.586821	10.014091	9.985909	29	56	
5	15	9.399210	10.600790	9.413309	10.586691	10.014099	9.985901	45	55	
6	30	9.399332	10.600668	9.413439	10.586561	10.014108	9.985892	30	54	
7	45	9.399454	10.600546	9.413569	10.586431	10.014116	9.985884	15	53	
8	32	9.399575	10.600425	9.413699	10.586301	10.014124	9.985876	28	52	
9	15	9.399697	10.600303	9.413829	10.586171	10.014132	9.985868	45	51	
10	30	9.399819	10.600181	9.413959	10.586041	10.014140	9.985860	30	50	
11	45	9.399941	10.600059	9.414089	10.585911	10.014148	9.985852	15	49	
12	33	9.400062	10.599938	9.414219	10.585781	10.014157	9.985843	27	48	
13	15	9.400184	10.599816	9.414349	10.585651	10.014165	9.985835	45	47	
14	30	9.400306	10.599694	9.414479	10.585521	10.014173	9.985827	30	46	
15	45	9.400427	10.599573	9.414609	10.585391	10.014181	9.985819	15	45	
16	34	9.400549	10.599451	9.414738	10.585262	10.014189	9.985811	26	44	
17	15	9.400670	10.599330	9.414868	10.585132	10.014198	9.985802	45	43	
18	30	9.400792	10.599208	9.414998	10.585002	10.014206	9.985794	30	42	
19	45	9.400913	10.599087	9.415127	10.584873	10.014214	9.985786	15	41	
20	35	9.401035	10.598965	9.415257	10.584743	10.014222	9.985778	25	40	
21	15	9.401156	10.598844	9.415387	10.584613	10.014231	9.985769	45	39	
22	30	9.401277	10.598723	9.415516	10.584484	10.014239	9.985761	30	38	
23	45	9.401399	10.598601	9.415646	10.584354	10.014247	9.985753	15	37	
24	36	9.401520	10.598480	9.415775	10.584225	10.014255	9.985745	24	36	
25	15	9.401641	10.598359	9.415905	10.584095	10.014263	9.985737	45	35	
26	30	9.401762	10.598238	9.416034	10.583966	10.014272	9.985729	30	34	
27	45	9.401884	10.598116	9.416163	10.583837	10.014280	9.985720	15	33	
28	37	9.402005	10.597995	9.416293	10.583707	10.014288	9.985712	23	32	
29	15	9.402126	10.597874	9.416422	10.583578	10.014296	9.985704	45	31	
30	30	9.402247	10.597753	9.416551	10.583449	10.014305	9.985696	30	30	
31	45	9.402368	10.597632	9.416681	10.583319	10.014313	9.985687	15	29	
32	38	9.402489	10.597511	9.416810	10.583190	10.014321	9.985679	22	28	
33	15	9.402610	10.597390	9.416939	10.583061	10.014329	9.985671	45	27	
34	30	9.402731	10.597269	9.417068	10.582932	10.014338	9.985662	30	26	
35	45	9.402852	10.597148	9.417197	10.582803	10.014346	9.985654	15	25	
36	39	9.402972	10.597028	9.417326	10.582674	10.014354	9.985646	21	24	
37	15	9.403093	10.596907	9.417455	10.582545	10.014362	9.985638	45	23	
38	30	9.403214	10.596786	9.417585	10.582415	10.014371	9.985629	30	22	
39	45	9.403335	10.596665	9.417713	10.582287	10.014379	9.985621	15	21	
40	40	9.403455	10.596545	9.417842	10.582158	10.014387	9.985613	20	20	
41	15	9.403576	10.596424	9.417971	10.582029	10.014395	9.985605	45	19	
42	30	9.403697	10.596303	9.418100	10.581900	10.014404	9.985596	30	18	
43	45	9.403817	10.596183	9.418229	10.581771	10.014412	9.985588	15	17	
44	41	9.403938	10.596062	9.418358	10.581642	10.014420	9.985580	19	16	
45	15	9.404058	10.595942	9.418487	10.581513	10.014428	9.985572	45	15	
46	30	9.404179	10.595821	9.418615	10.581385	10.014437	9.985563	30	14	
47	45	9.404299	10.595701	9.418744	10.581256	10.014445	9.985555	15	13	
48	42	9.404420	10.595580	9.418873	10.581127	10.014453	9.985547	18	12	
49	15	9.404540	10.595460	9.419002	10.580998	10.014462	9.985538	45	11	
50	30	9.404660	10.595340	9.419130	10.580870	10.014470	9.985530	30	10	
51	45	9.404781	10.595219	9.419259	10.580741	10.014478	9.985522	15	9	
52	43	9.404901	10.595099	9.419387	10.580613	10.014487	9.985513	17	8	
53	15	9.405021	10.594979	9.419516	10.580484	10.014495	9.985505	45	7	
54	30	9.405141	10.594859	9.419644	10.580356	10.014503	9.985497	30	6	
55	45	9.405261	10.594739	9.419773	10.580227	10.014511	9.985489	15	5	
56	44	9.405382	10.594618	9.419901	10.580099	10.014520	9.985480	16	4	
57	15	9.405502	10.594498	9.420030	10.579970	10.014528	9.985472	45	3	
58	30	9.405622	10.594378	9.420158	10.579842	10.014536	9.985464	30	2	
59	45	9.405742	10.594258	9.420286	10.579714	10.014545	9.985455	15	1	
60	45	9.405862	10.594138	9.420415	10.579585	10.014553	9.985447	15	0	
sec.	' "	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	' "	sec.	
5° 1'.			LOG. SINES, &c.					75 deg.		

0 ^h 59 ^m .		LOG. SINES, &c. (t.)						14 deg
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"
0	45	9.405862	10.594138	9.420415	10.579585	10.014553	9.985447	15
1	15	9.405982	10.594018	9.420543	10.579457	10.014561	9.985439	45
2	30	9.406102	10.593898	9.420671	10.579329	10.014570	9.985430	30
3	45	9.406221	10.593779	9.420799	10.579201	10.014578	9.985422	15
4	46	9.406341	10.593659	9.420927	10.579073	10.014586	9.985414	14
5	15	9.406461	10.593539	9.421056	10.578944	10.014595	9.985405	45
6	30	9.406581	10.593419	9.421184	10.578816	10.014603	9.985397	30
7	45	9.406701	10.593299	9.421312	10.578688	10.014611	9.985389	15
8	47	9.406820	10.593180	9.421440	10.578560	10.014620	9.985380	15
9	15	9.406940	10.593060	9.421568	10.578432	10.014628	9.985372	45
10	30	9.407060	10.592940	9.421696	10.578304	10.014636	9.985364	30
11	45	9.407179	10.592821	9.421824	10.578176	10.014645	9.985355	15
12	48	9.407299	10.592701	9.421951	10.578049	10.014653	9.985347	12
13	15	9.407418	10.592582	9.422079	10.577921	10.014661	9.985339	45
14	30	9.407538	10.592462	9.422207	10.577793	10.014670	9.985330	30
15	45	9.407657	10.592343	9.422335	10.577665	10.014678	9.985322	15
16	49	9.407777	10.592223	9.422463	10.577537	10.014686	9.985314	11
17	15	9.407896	10.592104	9.422590	10.577410	10.014695	9.985305	45
18	30	9.408015	10.591985	9.422718	10.577282	10.014703	9.985297	30
19	45	9.408135	10.591865	9.422846	10.577154	10.014711	9.985289	15
20	50	9.408254	10.591746	9.422973	10.577027	10.014720	9.985280	10
21	15	9.408373	10.591627	9.423101	10.576899	10.014728	9.985272	45
22	30	9.408492	10.591508	9.423229	10.576771	10.014736	9.985264	30
23	45	9.408611	10.591389	9.423356	10.576644	10.014745	9.985255	15
24	51	9.408731	10.591269	9.423484	10.576516	10.014753	9.985247	9
25	15	9.408850	10.591150	9.423611	10.576389	10.014762	9.985238	45
26	30	9.408969	10.591031	9.423739	10.576261	10.014770	9.985230	30
27	45	9.409088	10.590912	9.423866	10.576134	10.014778	9.985222	15
28	52	9.409207	10.590793	9.423993	10.576007	10.014787	9.985213	8
29	15	9.409326	10.590674	9.424121	10.575879	10.014795	9.985205	45
30	30	9.409445	10.590555	9.424248	10.575752	10.014804	9.985196	30
31	45	9.409563	10.590437	9.424375	10.575625	10.014812	9.985188	15
32	53	9.409682	10.590318	9.424503	10.575497	10.014820	9.985180	7
33	15	9.409801	10.590199	9.424630	10.575370	10.014829	9.985171	45
34	30	9.409920	10.590080	9.424757	10.575243	10.014837	9.985163	30
35	45	9.410039	10.589961	9.424884	10.575116	10.014845	9.985155	15
36	54	9.410157	10.589843	9.425011	10.574989	10.014854	9.985146	6
37	15	9.410276	10.589724	9.425138	10.574862	10.014862	9.985138	45
38	30	9.410395	10.589605	9.425265	10.574735	10.014871	9.985129	30
39	45	9.410513	10.589487	9.425392	10.574608	10.014879	9.985121	15
40	55	9.410632	10.589368	9.425519	10.574481	10.014888	9.985112	5
41	15	9.410750	10.589250	9.425646	10.574354	10.014896	9.985104	45
42	30	9.410869	10.589131	9.425773	10.574227	10.014904	9.985096	30
43	45	9.410987	10.589013	9.425900	10.574100	10.014913	9.985087	15
44	56	9.411106	10.588894	9.426027	10.573973	10.014921	9.985079	4
45	15	9.411224	10.588776	9.426154	10.573846	10.014930	9.985070	45
46	30	9.411343	10.588657	9.426281	10.573719	10.014938	9.985062	30
47	45	9.411461	10.588539	9.426407	10.573593	10.014946	9.985054	15
48	57	9.411579	10.588421	9.426534	10.573466	10.014955	9.985045	3
49	15	9.411698	10.588302	9.426661	10.573339	10.014963	9.985037	45
50	30	9.411816	10.588184	9.426787	10.573213	10.014972	9.985028	30
51	45	9.411934	10.588066	9.426914	10.573086	10.014980	9.985020	15
52	58	9.412052	10.587948	9.427041	10.572959	10.014989	9.985011	2
53	15	9.412170	10.587830	9.427167	10.572833	10.014997	9.985003	45
54	30	9.412288	10.587712	9.427294	10.572706	10.015006	9.984994	30
55	45	9.412406	10.587594	9.427420	10.572580	10.015014	9.984986	15
56	59	9.412524	10.587476	9.427547	10.572453	10.015022	9.984978	1
57	15	9.412642	10.587358	9.427673	10.572327	10.015031	9.984969	45
58	30	9.412760	10.587240	9.427800	10.572200	10.015039	9.984961	30
59	45	9.412878	10.587122	9.427926	10.572074	10.015048	9.984952	15
60	60	9.412996	10.587004	9.428052	10.571948	10.015056	9.984944	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"
5 ^h 0 ^m .		LOG. SINES, &c.						75 deg.

1 ^h 0 ^m .		LOG. SINES, &c. (t.)						15 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.412996	10.587004	9.428052	10.571948	10.015056	9.984944	60	60
1	15	9.413114	10.586886	9.428179	10.571821	10.015065	9.984935	45	59
2	30	9.413232	10.586768	9.428305	10.571695	10.015073	9.984927	30	58
3	45	9.413350	10.586650	9.428431	10.571569	10.015082	9.984918	15	57
4	1	9.413467	10.586533	9.428557	10.571443	10.015090	9.984910	59	56
5	15	9.413585	10.586415	9.428684	10.571316	10.015099	9.984901	45	55
6	30	9.413703	10.586297	9.428810	10.571190	10.015107	9.984893	30	54
7	45	9.413821	10.586179	9.428936	10.571064	10.015116	9.984884	15	53
8	2	9.413938	10.586062	9.429062	10.570938	10.015124	9.984876	58	52
9	15	9.414056	10.585944	9.429188	10.570812	10.015133	9.984867	45	51
10	30	9.414173	10.585827	9.429314	10.570686	10.015141	9.984859	30	50
11	45	9.414291	10.585709	9.429440	10.570560	10.015150	9.984850	15	49
12	3	9.414408	10.585592	9.429566	10.570434	10.015158	9.984842	57	48
13	15	9.414526	10.585474	9.429692	10.570308	10.015166	9.984834	45	47
14	30	9.414643	10.585357	9.429818	10.570182	10.015175	9.984825	30	46
15	45	9.414760	10.585240	9.429944	10.570056	10.015183	9.984817	15	45
16	4	9.414878	10.585122	9.430070	10.569930	10.015192	9.984808	56	44
17	15	9.414995	10.585005	9.430195	10.569805	10.015200	9.984800	45	43
18	30	9.415112	10.584888	9.430321	10.569679	10.015209	9.984791	30	42
19	45	9.415230	10.584770	9.430447	10.569553	10.015218	9.984782	15	41
20	5	9.415347	10.584653	9.430573	10.569427	10.015226	9.984774	55	40
21	15	9.415464	10.584536	9.430698	10.569302	10.015235	9.984765	45	39
22	30	9.415581	10.584419	9.430824	10.569176	10.015243	9.984757	30	38
23	45	9.415698	10.584302	9.430950	10.569050	10.015252	9.984748	15	37
24	6	9.415815	10.584185	9.431075	10.568925	10.015260	9.984740	54	36
25	15	9.415932	10.584068	9.431201	10.568799	10.015269	9.984731	45	35
26	30	9.416049	10.583951	9.431326	10.568674	10.015277	9.984723	30	34
27	45	9.416166	10.583834	9.431452	10.568548	10.015286	9.984714	15	33
28	7	9.416283	10.583717	9.431577	10.568423	10.015294	9.984706	53	32
29	15	9.416400	10.583600	9.431703	10.568297	10.015303	9.984697	45	31
30	30	9.416517	10.583483	9.431828	10.568172	10.015311	9.984689	30	30
31	45	9.416634	10.583366	9.431953	10.568047	10.015320	9.984680	15	29
32	8	9.416751	10.583249	9.432079	10.567921	10.015328	9.984672	52	28
33	15	9.416867	10.583133	9.432204	10.567796	10.015337	9.984663	45	27
34	30	9.416984	10.583016	9.432329	10.567671	10.015345	9.984655	30	26
35	45	9.417101	10.582899	9.432455	10.567545	10.015354	9.984646	15	25
36	9	9.417217	10.582783	9.432580	10.567420	10.015363	9.984637	51	24
37	15	9.417334	10.582666	9.432705	10.567295	10.015371	9.984629	45	23
38	30	9.417451	10.582549	9.432830	10.567170	10.015380	9.984620	30	22
39	45	9.417567	10.582433	9.432955	10.567045	10.015388	9.984612	15	21
40	10	9.417684	10.582316	9.433080	10.566920	10.015397	9.984603	50	20
41	15	9.417800	10.582200	9.433205	10.566795	10.015405	9.984595	45	19
42	30	9.417917	10.582083	9.433330	10.566670	10.015414	9.984586	30	18
43	45	9.418033	10.581967	9.433455	10.566545	10.015422	9.984578	15	17
44	11	9.418149	10.581851	9.433580	10.566420	10.015431	9.984569	49	16
45	15	9.418266	10.581734	9.433705	10.566295	10.015440	9.984560	45	15
46	30	9.418382	10.581618	9.433830	10.566170	10.015448	9.984552	30	14
47	45	9.418498	10.581502	9.433955	10.566045	10.015457	9.984543	15	13
48	12	9.418615	10.581385	9.434080	10.565920	10.015465	9.984535	48	12
49	15	9.418731	10.581269	9.434205	10.565795	10.015474	9.984526	45	11
50	30	9.418847	10.581153	9.434330	10.565670	10.015482	9.984518	30	10
51	45	9.418963	10.581037	9.434454	10.565546	10.015491	9.984509	15	9
52	13	9.419079	10.580921	9.434579	10.565421	10.015500	9.984500	47	8
53	15	9.419196	10.580804	9.434704	10.565296	10.015508	9.984492	45	7
54	30	9.419312	10.580688	9.434828	10.565172	10.015517	9.984483	30	6
55	45	9.419428	10.580572	9.434953	10.565047	10.015525	9.984475	15	5
56	14	9.419544	10.580456	9.435078	10.564922	10.015534	9.984466	46	4
57	15	9.419660	10.580340	9.435202	10.564798	10.015543	9.984457	45	3
58	30	9.419775	10.580225	9.435327	10.564673	10.015551	9.984449	30	2
59	45	9.419891	10.580109	9.435451	10.564549	10.015560	9.984440	15	1
60	15	9.420007	10.579993	9.435576	10.564424	10.015568	9.984432	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 59 ^m .		LOG. SINES, &c.						74 deg.	

1° 30'		LOG. SINES, &c. (t)						15 deg.	
sec.	' "	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	' "	
0	45	9.433675	10.566325	9.450294	10.549706	10.016620	9.983380	15	
1	15	9.433786	10.566214	9.450415	10.549585	10.016628	9.983372	45	
2	30	9.433898	10.566102	9.450536	10.549464	10.016637	9.983363	30	
3	45	9.434010	10.565990	9.450657	10.549343	10.016646	9.983354	15	
4	46	9.434122	10.565878	9.450777	10.549223	10.016655	9.983345	14	
5	15	9.434234	10.565766	9.450898	10.549102	10.016664	9.983336	45	
6	30	9.434346	10.565654	9.451019	10.548981	10.016673	9.983327	30	
7	45	9.434458	10.565542	9.451140	10.548860	10.016682	9.983318	15	
8	47	9.434569	10.565431	9.451260	10.548740	10.016691	9.983309	13	
9	15	9.434681	10.565319	9.451381	10.548619	10.016700	9.983300	45	
10	30	9.434793	10.565207	9.451501	10.548499	10.016709	9.983291	30	
11	45	9.434904	10.565096	9.451622	10.548378	10.016718	9.983282	15	
12	48	9.435016	10.564984	9.451743	10.548257	10.016727	9.983273	12	
13	15	9.435128	10.564872	9.451863	10.548137	10.016736	9.983264	45	
14	30	9.435239	10.564761	9.451984	10.548016	10.016744	9.983256	30	
15	45	9.435351	10.564649	9.452104	10.547896	10.016753	9.983247	15	
16	49	9.435462	10.564538	9.452225	10.547775	10.016762	9.983238	11	
17	15	9.435574	10.564426	9.452345	10.547655	10.016771	9.983229	45	
18	30	9.435685	10.564315	9.452465	10.547535	10.016780	9.983220	30	
19	45	9.435797	10.564203	9.452586	10.547414	10.016789	9.983211	15	
20	50	9.435908	10.564092	9.452706	10.547294	10.016798	9.983202	10	
21	15	9.436019	10.563981	9.452826	10.547174	10.016807	9.983193	45	
22	30	9.436131	10.563869	9.452947	10.547053	10.016816	9.983184	30	
23	45	9.436242	10.563758	9.453067	10.546933	10.016825	9.983175	15	
24	51	9.436353	10.563647	9.453187	10.546813	10.016834	9.983166	9	
25	15	9.436464	10.563536	9.453307	10.546693	10.016843	9.983157	45	
26	30	9.436576	10.563424	9.453428	10.546572	10.016852	9.983148	30	
27	45	9.436687	10.563313	9.453548	10.546452	10.016861	9.983139	15	
28	52	9.436798	10.563202	9.453668	10.546332	10.016870	9.983130	8	
29	15	9.436909	10.563091	9.453788	10.546212	10.016879	9.983121	45	
30	30	9.437020	10.562980	9.453908	10.546092	10.016888	9.983112	30	
31	45	9.437131	10.562869	9.454028	10.545972	10.016897	9.983103	15	
32	53	9.437242	10.562758	9.454148	10.545852	10.016906	9.983094	7	
33	15	9.437353	10.562647	9.454268	10.545732	10.016915	9.983085	45	
34	30	9.437464	10.562536	9.454388	10.545612	10.016924	9.983076	30	
35	45	9.437575	10.562425	9.454508	10.545492	10.016933	9.983067	15	
36	54	9.437686	10.562314	9.454628	10.545372	10.016942	9.983058	6	
37	15	9.437797	10.562203	9.454747	10.545253	10.016951	9.983049	45	
38	30	9.437908	10.562092	9.454867	10.545133	10.016960	9.983040	30	
39	45	9.438018	10.561982	9.454987	10.545013	10.016969	9.983031	15	
40	55	9.438129	10.561871	9.455107	10.544893	10.016978	9.983022	5	
41	15	9.438240	10.561760	9.455227	10.544773	10.016987	9.983013	45	
42	30	9.438351	10.561649	9.455346	10.544654	10.016996	9.983004	30	
43	45	9.438461	10.561539	9.455466	10.544534	10.017005	9.982995	15	
44	56	9.438572	10.561428	9.455586	10.544414	10.017014	9.982986	4	
45	15	9.438682	10.561318	9.455705	10.544295	10.017023	9.982977	45	
46	30	9.438793	10.561207	9.455825	10.544175	10.017032	9.982968	30	
47	45	9.438904	10.561096	9.455944	10.544056	10.017041	9.982959	15	
48	57	9.439014	10.560986	9.456064	10.543936	10.017050	9.982950	3	
49	15	9.439125	10.560875	9.456184	10.543816	10.017059	9.982941	45	
50	30	9.439235	10.560765	9.456303	10.543697	10.017068	9.982932	30	
51	45	9.439346	10.560654	9.456422	10.543578	10.017077	9.982923	15	
52	58	9.439456	10.560544	9.456542	10.543458	10.017086	9.982914	2	
53	15	9.439566	10.560434	9.456661	10.543339	10.017095	9.982905	45	
54	30	9.439677	10.560323	9.456781	10.543219	10.017104	9.982896	30	
55	45	9.439787	10.560213	9.456900	10.543100	10.017113	9.982887	15	
56	59	9.439897	10.560103	9.457019	10.542981	10.017122	9.982878	1	
57	15	9.440007	10.559993	9.457139	10.542861	10.017131	9.982869	45	
58	30	9.440118	10.559882	9.457258	10.542742	10.017140	9.982860	30	
59	45	9.440228	10.559772	9.457377	10.542623	10.017149	9.982851	15	
60	60	9.440338	10.559662	9.457496	10.542504	10.017158	9.982842	0	
sec.	' "	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	' "	
4° 56'		LOG. SINES, &c.						74 deg.	

1 ^h 4 ^m .			LOG. SINES, &c. (1.)					16 deg.		
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	"	"	sec.
0	0	9.440338	10.559662	9.457496	10.542504	10.017158	9.982842	60		60
1	15	9.440448	10.559552	9.457616	10.542384	10.017167	9.982833	45		59
2	30	9.440558	10.559442	9.457735	10.542265	10.017177	9.982823	30		58
3	45	9.440668	10.559332	9.457854	10.542146	10.017186	9.982814	15		57
4	1	9.440778	10.559222	9.457973	10.542027	10.017195	9.982805	59		56
5	15	9.440888	10.559112	9.458092	10.541908	10.017204	9.982796	45		55
6	30	9.440998	10.559002	9.458211	10.541789	10.017213	9.982787	30		54
7	45	9.441108	10.558892	9.458330	10.541670	10.017222	9.982778	15		53
8	2	9.441218	10.558782	9.458449	10.541551	10.017231	9.982769	58		52
9	15	9.441328	10.558672	9.458568	10.541432	10.017240	9.982760	45		51
10	30	9.441438	10.558562	9.458687	10.541313	10.017249	9.982751	30		50
11	45	9.441548	10.558452	9.458806	10.541194	10.017258	9.982742	15		49
12	3	9.441658	10.558342	9.458925	10.541075	10.017267	9.982733	57		48
13	15	9.441767	10.558233	9.459044	10.540956	10.017276	9.982724	45		47
14	30	9.441877	10.558123	9.459162	10.540838	10.017285	9.982715	30		46
15	45	9.441987	10.558013	9.459281	10.540719	10.017295	9.982705	15		45
16	4	9.442096	10.557904	9.459400	10.540600	10.017304	9.982696	56		44
17	15	9.442206	10.557794	9.459519	10.540481	10.017313	9.982687	45		43
18	30	9.442316	10.557684	9.459637	10.540363	10.017322	9.982678	30		42
19	45	9.442425	10.557575	9.459756	10.540244	10.017331	9.982669	15		41
20	5	9.442535	10.557465	9.459875	10.540125	10.017340	9.982660	55		40
21	15	9.442644	10.557356	9.459993	10.540007	10.017349	9.982651	45		39
22	30	9.442754	10.557246	9.460112	10.539888	10.017358	9.982642	30		38
23	45	9.442863	10.557137	9.460231	10.539769	10.017367	9.982633	15		37
24	6	9.442973	10.557027	9.460349	10.539651	10.017376	9.982624	54		36
25	15	9.443082	10.556918	9.460468	10.539532	10.017386	9.982614	45		35
26	30	9.443192	10.556808	9.460586	10.539414	10.017395	9.982605	30		34
27	45	9.443301	10.556699	9.460705	10.539295	10.017404	9.982596	15		33
28	7	9.443410	10.556590	9.460823	10.539177	10.017413	9.982587	53		32
29	15	9.443520	10.556480	9.460942	10.539058	10.017422	9.982578	45		31
30	30	9.443629	10.556371	9.461060	10.538940	10.017431	9.982569	30		30
31	45	9.443738	10.556262	9.461178	10.538822	10.017440	9.982560	15		29
32	8	9.443847	10.556153	9.461297	10.538703	10.017449	9.982551	52		28
33	15	9.443956	10.556044	9.461415	10.538585	10.017459	9.982541	45		27
34	30	9.444065	10.555935	9.461533	10.538467	10.017468	9.982532	30		26
35	45	9.444175	10.555825	9.461651	10.538349	10.017477	9.982523	15		25
36	9	9.444284	10.555716	9.461770	10.538230	10.017486	9.982514	51		24
37	15	9.444393	10.555607	9.461888	10.538112	10.017495	9.982505	45		23
38	30	9.444502	10.555498	9.462006	10.537994	10.017504	9.982496	30		22
39	45	9.444611	10.555389	9.462124	10.537876	10.017513	9.982487	15		21
40	10	9.444720	10.555280	9.462242	10.537758	10.017523	9.982477	50		20
41	15	9.444829	10.555171	9.462360	10.537640	10.017532	9.982468	45		19
42	30	9.444938	10.555062	9.462478	10.537522	10.017541	9.982459	30		18
43	45	9.445046	10.554954	9.462596	10.537404	10.017550	9.982450	15		17
44	11	9.445155	10.554845	9.462714	10.537286	10.017559	9.982441	49		16
45	15	9.445264	10.554736	9.462832	10.537168	10.017568	9.982432	45		15
46	30	9.445373	10.554627	9.462950	10.537050	10.017578	9.982422	30		14
47	45	9.445482	10.554518	9.463068	10.536932	10.017587	9.982413	15		13
48	12	9.445590	10.554410	9.463186	10.536814	10.017596	9.982404	48		12
49	15	9.445699	10.554301	9.463304	10.536696	10.017605	9.982395	45		11
50	30	9.445808	10.554192	9.463422	10.536578	10.017614	9.982386	30		10
51	45	9.445916	10.554084	9.463540	10.536460	10.017624	9.982376	15		9
52	13	9.446025	10.553975	9.463658	10.536342	10.017633	9.982367	47		8
53	15	9.446133	10.553867	9.463775	10.536225	10.017642	9.982358	45		7
54	30	9.446242	10.553758	9.463893	10.536107	10.017651	9.982349	30		6
55	45	9.446351	10.553649	9.464011	10.535989	10.017660	9.982340	15		5
56	14	9.446459	10.553541	9.464128	10.535872	10.017669	9.982331	46		4
57	15	9.446567	10.553433	9.464246	10.535754	10.017679	9.982321	45		3
58	30	9.446676	10.553324	9.464364	10.535636	10.017688	9.982312	30		2
59	45	9.446784	10.553216	9.464481	10.535519	10.017697	9.982303	15		1
60	15	9.446893	10.553107	9.464599	10.535401	10.017706	9.982294	45		0
sec.	"	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	"	"	sec.
4 ^h 55 ^m .			LOG. SINES, &c.					73 deg.		

1 ^h 5 ^m .		LOG. SINES, &c. (t.)						16 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	"	"
0	15	9.446893	10.553107	9.464599	10.535401	10.017706	9.982294	45	6
1	15	9.447001	10.552999	9.464716	10.535284	10.017715	9.982285	45	5
2	30	9.447109	10.552891	9.464834	10.535166	10.017725	9.982275	30	5
3	45	9.447218	10.552782	9.464951	10.535049	10.017734	9.982266	15	5
4	16	9.447326	10.552674	9.465069	10.534931	10.017743	9.982257	44	5
5	15	9.447434	10.552566	9.465186	10.534814	10.017752	9.982248	45	5
6	30	9.447542	10.552458	9.465304	10.534696	10.017762	9.982238	30	5
7	45	9.447650	10.552350	9.465421	10.534579	10.017771	9.982229	15	5
8	17	9.447759	10.552241	9.465539	10.534461	10.017780	9.982220	43	5
9	15	9.447867	10.552133	9.465656	10.534344	10.017789	9.982211	45	5
10	30	9.447975	10.552025	9.465773	10.534227	10.017798	9.982202	30	5
11	45	9.448083	10.551917	9.465890	10.534110	10.017808	9.982192	15	4
12	18	9.448191	10.551809	9.466008	10.533992	10.017817	9.982183	42	4
13	15	9.448299	10.551701	9.466125	10.533875	10.017826	9.982174	45	4
14	30	9.448407	10.551593	9.466242	10.533758	10.017835	9.982165	30	4
15	45	9.448515	10.551485	9.466359	10.533641	10.017845	9.982155	15	4
16	19	9.448623	10.551377	9.466476	10.533524	10.017854	9.982146	41	4
17	15	9.448731	10.551269	9.466594	10.533406	10.017863	9.982137	45	4
18	30	9.448838	10.551162	9.466711	10.533289	10.017872	9.982128	30	4
19	45	9.448946	10.551054	9.466828	10.533172	10.017882	9.982118	15	4
20	20	9.449054	10.550946	9.466945	10.533055	10.017891	9.982109	40	4
21	15	9.449162	10.550838	9.467062	10.532938	10.017900	9.982100	45	3
22	30	9.449269	10.550731	9.467179	10.532821	10.017909	9.982091	30	3
23	45	9.449377	10.550623	9.467296	10.532704	10.017919	9.982081	15	3
24	21	9.449485	10.550515	9.467413	10.532587	10.017928	9.982072	39	3
25	15	9.449592	10.550408	9.467530	10.532470	10.017937	9.982063	45	3
26	30	9.449700	10.550300	9.467646	10.532354	10.017946	9.982054	30	3
27	45	9.449808	10.550192	9.467763	10.532237	10.017956	9.982044	15	3
28	22	9.449915	10.550085	9.467880	10.532120	10.017965	9.982035	38	3
29	15	9.450023	10.549977	9.467997	10.532003	10.017974	9.982026	45	3
30	30	9.450130	10.549870	9.468114	10.531886	10.017984	9.982016	30	3
31	45	9.450238	10.549762	9.468230	10.531770	10.017993	9.982007	15	2
32	23	9.450345	10.549655	9.468347	10.531653	10.018002	9.981998	37	2
33	15	9.450453	10.549547	9.468464	10.531536	10.018011	9.981989	45	2
34	30	9.450560	10.549440	9.468581	10.531419	10.018021	9.981979	30	2
35	45	9.450667	10.549333	9.468697	10.531303	10.018030	9.981970	15	2
36	24	9.450775	10.549225	9.468814	10.531186	10.018039	9.981961	36	2
37	15	9.450882	10.549118	9.468930	10.531070	10.018049	9.981951	45	2
38	30	9.450989	10.549011	9.469047	10.530953	10.018058	9.981942	30	2
39	45	9.451096	10.548904	9.469164	10.530836	10.018067	9.981933	15	2
40	25	9.451204	10.548796	9.469280	10.530720	10.018076	9.981924	35	2
41	15	9.451311	10.548689	9.469397	10.530603	10.018086	9.981914	45	1
42	30	9.451418	10.548582	9.469513	10.530487	10.018095	9.981905	30	1
43	45	9.451525	10.548475	9.469629	10.530371	10.018104	9.981896	15	1
44	26	9.451632	10.548368	9.469746	10.530254	10.018114	9.981886	34	1
45	15	9.451739	10.548261	9.469862	10.530138	10.018123	9.981877	45	1
46	30	9.451846	10.548154	9.469979	10.530021	10.018132	9.981868	30	1
47	45	9.451953	10.548047	9.470095	10.529905	10.018142	9.981858	15	1
48	27	9.452060	10.547940	9.470211	10.529789	10.018151	9.981849	33	1
49	15	9.452167	10.547833	9.470327	10.529673	10.018160	9.981840	45	1
50	30	9.452274	10.547726	9.470444	10.529556	10.018170	9.981830	30	1
51	45	9.452381	10.547619	9.470560	10.529440	10.018179	9.981821	15	1
52	28	9.452488	10.547512	9.470676	10.529324	10.018188	9.981812	32	1
53	15	9.452595	10.547405	9.470792	10.529208	10.018198	9.981802	45	1
54	30	9.452702	10.547298	9.470908	10.529092	10.018207	9.981793	30	1
55	45	9.452808	10.547192	9.471025	10.528975	10.018216	9.981784	15	1
56	29	9.452915	10.547085	9.471141	10.528859	10.018226	9.981774	31	1
57	15	9.453022	10.546978	9.471257	10.528743	10.018235	9.981765	45	1
58	30	9.453128	10.546872	9.471373	10.528627	10.018244	9.981756	30	1
59	45	9.453235	10.546765	9.471489	10.528511	10.018254	9.981746	15	1
60	30	9.453342	10.546658	9.471605	10.528395	10.018263	9.981737	30	1
sec.	"	cosec.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"
4 ^h 54 ^m .		LOG. SINES, &c.						73 deg.	

1° 6'.		LOG. SINES, &c. (L.)						16 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	9.453342	10.546658	9.471605	10.528395	10.018263	9.981737	30	60
1	15	9.453448	10.546552	9.471721	10.528279	10.018272	9.981728	45	59
2	30	9.453555	10.546445	9.471837	10.528163	10.018282	9.981718	30	58
3	45	9.453661	10.546339	9.471953	10.528047	10.018291	9.981709	15	57
4	31	9.453768	10.546232	9.472068	10.527932	10.018301	9.981699	29	56
5	15	9.453875	10.546125	9.472184	10.527816	10.018310	9.981690	45	55
6	30	9.453981	10.546019	9.472300	10.527700	10.018319	9.981681	30	54
7	45	9.454087	10.545913	9.472416	10.527584	10.018329	9.981671	15	53
8	32	9.454194	10.545806	9.472532	10.527468	10.018338	9.981662	28	52
9	15	9.454300	10.545700	9.472648	10.527352	10.018347	9.981653	45	51
10	30	9.454407	10.545593	9.472763	10.527237	10.018357	9.981643	30	50
11	45	9.454513	10.545487	9.472879	10.527121	10.018366	9.981634	15	49
12	33	9.454619	10.545381	9.472995	10.527005	10.018376	9.981624	27	48
13	15	9.454725	10.545275	9.473110	10.526890	10.018385	9.981615	45	47
14	30	9.454832	10.545168	9.473226	10.526774	10.018394	9.981606	30	46
15	45	9.454938	10.545062	9.473342	10.526658	10.018404	9.981596	15	45
16	34	9.455044	10.544956	9.473457	10.526543	10.018413	9.981587	26	44
17	15	9.455150	10.544850	9.473573	10.526427	10.018422	9.981578	45	43
18	30	9.455256	10.544744	9.473688	10.526312	10.018432	9.981568	30	42
19	45	9.455362	10.544638	9.473804	10.526196	10.018441	9.981559	15	41
20	35	9.455469	10.544531	9.473919	10.526081	10.018451	9.981549	25	40
21	15	9.455575	10.544425	9.474035	10.525965	10.018460	9.981540	45	39
22	30	9.455681	10.544319	9.474150	10.525850	10.018470	9.981530	30	38
23	45	9.455787	10.544213	9.474265	10.525735	10.018479	9.981521	15	37
24	36	9.455893	10.544107	9.474381	10.525619	10.018488	9.981512	24	36
25	15	9.455998	10.544002	9.474496	10.525504	10.018498	9.981502	45	35
26	30	9.456104	10.543896	9.474611	10.525389	10.018507	9.981493	30	34
27	45	9.456210	10.543790	9.474727	10.525273	10.018517	9.981483	15	33
28	37	9.456316	10.543684	9.474842	10.525158	10.018526	9.981474	23	32
29	15	9.456422	10.543578	9.474957	10.525043	10.018535	9.981465	45	31
30	30	9.456528	10.543472	9.475072	10.524928	10.018545	9.981455	30	30
31	45	9.456633	10.543367	9.475188	10.524812	10.018554	9.981446	15	29
32	38	9.456739	10.543261	9.475303	10.524697	10.018564	9.981436	22	28
33	15	9.456845	10.543155	9.475418	10.524582	10.018573	9.981427	45	27
34	30	9.456951	10.543049	9.475533	10.524467	10.018583	9.981417	30	26
35	45	9.457056	10.542944	9.475648	10.524352	10.018592	9.981408	15	25
36	39	9.457162	10.542838	9.475763	10.524237	10.018601	9.981399	21	24
37	15	9.457267	10.542733	9.475878	10.524122	10.018611	9.981389	45	23
38	30	9.457373	10.542627	9.475993	10.524007	10.018620	9.981380	30	22
39	45	9.457478	10.542522	9.476108	10.523892	10.018630	9.981370	15	21
40	40	9.457584	10.542416	9.476223	10.523777	10.018639	9.981361	20	20
41	15	9.457689	10.542311	9.476338	10.523662	10.018649	9.981351	45	19
42	30	9.457795	10.542205	9.476453	10.523547	10.018658	9.981342	30	18
43	45	9.457900	10.542100	9.476568	10.523432	10.018668	9.981332	15	17
44	41	9.458006	10.541994	9.476683	10.523317	10.018677	9.981323	19	16
45	15	9.458111	10.541889	9.476798	10.523202	10.018687	9.981313	45	15
46	30	9.458216	10.541784	9.476912	10.523088	10.018696	9.981304	30	14
47	45	9.458322	10.541678	9.477027	10.522973	10.018706	9.981294	15	13
48	42	9.458427	10.541573	9.477142	10.522858	10.018715	9.981285	18	12
49	15	9.458532	10.541468	9.477257	10.522743	10.018724	9.981276	45	11
50	30	9.458638	10.541362	9.477371	10.522629	10.018734	9.981266	30	10
51	45	9.458743	10.541257	9.477486	10.522514	10.018743	9.981257	15	9
52	43	9.458848	10.541152	9.477601	10.522399	10.018753	9.981247	17	8
53	15	9.458953	10.541047	9.477715	10.522285	10.018762	9.981238	45	7
54	30	9.459058	10.540942	9.477830	10.522170	10.018772	9.981228	30	6
55	45	9.459163	10.540837	9.477945	10.522055	10.018781	9.981219	15	5
56	44	9.459268	10.540732	9.478059	10.521941	10.018791	9.981209	16	4
57	15	9.459373	10.540627	9.478174	10.521826	10.018800	9.981200	45	3
58	30	9.459478	10.540522	9.478288	10.521712	10.018810	9.981190	30	2
59	45	9.459583	10.540417	9.478403	10.521597	10.018819	9.981181	15	1
60	45	9.459688	10.540312	9.478517	10.521483	10.018829	9.981171	15	0
sec.	"	sine.	secant.	cotangent.	tangent.	coscant.	sine.	"	sec.
4° 53'.		LOG. SINES, &c.						73 deg.	

1 ^h 7 ^m .		LOG. SINES, &c. (t)						16 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cotang.	"	"
0	45	9.459688	10.540312	9.478517	10.521483	10.018829	9.981171	15	
1	15	9.459793	10.540207	9.478632	10.521368	10.018838	9.981162	45	
2	30	9.459898	10.540102	9.478746	10.521254	10.018848	9.981152	30	
3	45	9.460003	10.539997	9.478860	10.521140	10.018857	9.981143	15	
4	46	9.460108	10.539892	9.478975	10.521025	10.018867	9.981133	14	
5	15	9.460213	10.539787	9.479089	10.520911	10.018876	9.981124	45	
6	30	9.460317	10.539683	9.479203	10.520797	10.018886	9.981114	30	
7	45	9.460422	10.539578	9.479318	10.520682	10.018896	9.981104	15	
8	47	9.460527	10.539473	9.479432	10.520568	10.018905	9.981095	13	
9	15	9.460632	10.539368	9.479546	10.520454	10.018915	9.981085	45	
10	30	9.460736	10.539264	9.479660	10.520340	10.018924	9.981076	30	
11	45	9.460841	10.539159	9.479775	10.520225	10.018934	9.981066	15	
12	48	9.460946	10.539054	9.479889	10.520111	10.018943	9.981057	12	
13	15	9.461050	10.538950	9.480003	10.519997	10.018953	9.981047	45	
14	30	9.461155	10.538845	9.480117	10.519883	10.018962	9.981038	30	
15	45	9.461259	10.538741	9.480231	10.519769	10.018972	9.981028	15	
16	49	9.461364	10.538636	9.480345	10.519655	10.018981	9.981019	11	
17	15	9.461468	10.538532	9.480459	10.519541	10.018991	9.981009	45	
18	30	9.461573	10.538427	9.480573	10.519427	10.019000	9.981000	30	
19	45	9.461677	10.538323	9.480687	10.519313	10.019010	9.980990	15	
20	50	9.461782	10.538218	9.480801	10.519199	10.019020	9.980980	10	
21	15	9.461886	10.538114	9.480915	10.519085	10.019029	9.980971	45	
22	30	9.461990	10.538010	9.481029	10.518971	10.019039	9.980961	30	
23	45	9.462095	10.537905	9.481143	10.518857	10.019048	9.980952	15	
24	51	9.462199	10.537801	9.481257	10.518743	10.019058	9.980942	9	
25	15	9.462303	10.537697	9.481370	10.518630	10.019067	9.980933	45	
26	30	9.462407	10.537593	9.481484	10.518516	10.019077	9.980923	30	
27	45	9.462512	10.537488	9.481598	10.518402	10.019086	9.980914	15	
28	52	9.462616	10.537384	9.481712	10.518288	10.019096	9.980904	8	
29	15	9.462720	10.537280	9.481825	10.518175	10.019106	9.980894	45	
30	30	9.462824	10.537176	9.481939	10.518061	10.019115	9.980885	30	
31	45	9.462928	10.537072	9.482053	10.517947	10.019125	9.980875	15	
32	53	9.463032	10.536968	9.482167	10.517833	10.019134	9.980866	7	
33	15	9.463136	10.536864	9.482280	10.517720	10.019144	9.980856	45	
34	30	9.463240	10.536760	9.482394	10.517606	10.019154	9.980846	30	
35	45	9.463344	10.536656	9.482507	10.517493	10.019163	9.980837	15	
36	54	9.463448	10.536552	9.482621	10.517379	10.019173	9.980827	6	
37	15	9.463552	10.536448	9.482734	10.517266	10.019182	9.980818	45	
38	30	9.463656	10.536344	9.482848	10.517152	10.019192	9.980808	30	
39	45	9.463760	10.536240	9.482961	10.517039	10.019202	9.980798	15	
40	55	9.463864	10.536136	9.483075	10.516925	10.019211	9.980789	5	
41	15	9.463968	10.536032	9.483188	10.516812	10.019221	9.980779	45	
42	30	9.464071	10.535929	9.483302	10.516698	10.019230	9.980770	30	
43	45	9.464175	10.535825	9.483415	10.516585	10.019240	9.980760	15	
44	56	9.464279	10.535721	9.483529	10.516471	10.019250	9.980750	4	
45	15	9.464383	10.535617	9.483642	10.516358	10.019259	9.980741	45	
46	30	9.464486	10.535514	9.483755	10.516245	10.019269	9.980731	30	
47	45	9.464590	10.535410	9.483868	10.516132	10.019278	9.980722	15	
48	57	9.464694	10.535306	9.483982	10.516018	10.019288	9.980712	3	
49	15	9.464797	10.535203	9.484095	10.515905	10.019298	9.980702	45	
50	30	9.464901	10.535099	9.484208	10.515792	10.019307	9.980693	30	
51	45	9.465004	10.534996	9.484321	10.515679	10.019317	9.980683	15	
52	58	9.465108	10.534892	9.484435	10.515565	10.019327	9.980673	2	
53	15	9.465212	10.534788	9.484548	10.515452	10.019336	9.980664	45	
54	30	9.465315	10.534685	9.484661	10.515339	10.019346	9.980654	30	
55	45	9.465418	10.534582	9.484774	10.515226	10.019355	9.980645	15	
56	59	9.465522	10.534478	9.484887	10.515113	10.019365	9.980635	1	
57	15	9.465625	10.534375	9.485000	10.515000	10.019375	9.980625	45	
58	30	9.465729	10.534271	9.485113	10.514887	10.019384	9.980616	30	
59	45	9.465832	10.534168	9.485226	10.514774	10.019394	9.980606	15	
60	60	9.465935	10.534065	9.485339	10.514661	10.019404	9.980596	0	
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"
4 ^h 52 ^m .		LOG. SINES, &c.						73 deg	

1 ^h 8 ^m .		LOG. SINES &c. (t.)						17 deg.		
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.	
0	0	9.465935	10.534065	9.485339	10.514661	10.019404	9.980596	60	60	
1	15	9.466039	10.533961	9.485452	10.514548	10.019413	9.980587	45	59	
2	30	9.466142	10.533858	9.485565	10.514435	10.019423	9.980578	30	58	
3	45	9.466245	10.533755	9.485678	10.514322	10.019433	9.980567	15	57	
4	1	9.466348	10.533652	9.485791	10.514209	10.019442	9.980558	59	56	
5	15	9.466451	10.533549	9.485903	10.514097	10.019452	9.980548	45	55	
6	30	9.466555	10.533445	9.486016	10.513984	10.019462	9.980538	30	54	
7	45	9.466658	10.533342	9.486129	10.513871	10.019471	9.980529	15	53	
8	2	9.466761	10.533239	9.486242	10.513758	10.019481	9.980519	58	52	
9	15	9.466864	10.533136	9.486355	10.513645	10.019491	9.980509	45	51	
10	30	9.466967	10.533033	9.486467	10.513533	10.019500	9.980500	30	50	
11	45	9.467070	10.532930	9.486580	10.513420	10.019510	9.980490	15	49	
12	3	9.467173	10.532827	9.486693	10.513307	10.019520	9.980480	57	48	
13	15	9.467276	10.532724	9.486805	10.513195	10.019529	9.980471	45	47	
14	30	9.467379	10.532621	9.486918	10.513082	10.019539	9.980461	30	46	
15	45	9.467482	10.532518	9.487031	10.512969	10.019549	9.980451	15	45	
16	4	9.467585	10.532415	9.487143	10.512857	10.019559	9.980441	56	44	
17	15	9.467688	10.532312	9.487256	10.512744	10.019568	9.980432	45	43	
18	30	9.467790	10.532210	9.487368	10.512632	10.019578	9.980422	30	42	
19	45	9.467893	10.532107	9.487481	10.512519	10.019588	9.980412	15	41	
20	5	9.467996	10.532004	9.487593	10.512407	10.019597	9.980403	55	40	
21	15	9.468099	10.531901	9.487706	10.512294	10.019607	9.980393	45	39	
22	30	9.468201	10.531799	9.487818	10.512182	10.019617	9.980383	30	38	
23	45	9.468304	10.531696	9.487931	10.512069	10.019626	9.980374	15	37	
24	6	9.468407	10.531593	9.488043	10.511957	10.019636	9.980364	54	36	
25	15	9.468509	10.531491	9.488155	10.511845	10.019646	9.980354	45	35	
26	30	9.468612	10.531388	9.488268	10.511732	10.019656	9.980344	30	34	
27	45	9.468715	10.531285	9.488380	10.511620	10.019665	9.980335	15	33	
28	7	9.468817	10.531183	9.488492	10.511508	10.019675	9.980325	53	32	
29	15	9.468920	10.531080	9.488605	10.511395	10.019685	9.980315	45	31	
30	30	9.469022	10.530978	9.488717	10.511283	10.019695	9.980305	30	30	
31	45	9.469125	10.530875	9.488829	10.511171	10.019704	9.980296	15	29	
32	8	9.469227	10.530773	9.488941	10.511059	10.019714	9.980286	52	28	
33	15	9.469330	10.530670	9.489053	10.510947	10.019724	9.980276	45	27	
34	30	9.469432	10.530568	9.489166	10.510834	10.019733	9.980267	30	26	
35	45	9.469535	10.530465	9.489278	10.510722	10.019743	9.980257	15	25	
36	9	9.469637	10.530363	9.489390	10.510610	10.019753	9.980247	51	24	
37	15	9.469739	10.530261	9.489502	10.510498	10.019763	9.980237	45	23	
38	30	9.469842	10.530158	9.489614	10.510386	10.019772	9.980228	30	22	
39	45	9.469944	10.530056	9.489726	10.510274	10.019782	9.980218	15	21	
40	10	9.470046	10.529954	9.489838	10.510162	10.019792	9.980208	50	20	
41	15	9.470148	10.529852	9.489950	10.510050	10.019802	9.980198	45	19	
42	30	9.470250	10.529750	9.490062	10.509938	10.019811	9.980189	30	18	
43	45	9.470353	10.529647	9.490174	10.509826	10.019821	9.980179	15	17	
44	11	9.470455	10.529545	9.490286	10.509714	10.019831	9.980169	49	16	
45	15	9.470557	10.529443	9.490398	10.509602	10.019841	9.980159	45	15	
46	30	9.470659	10.529341	9.490510	10.509490	10.019851	9.980149	30	14	
47	45	9.470761	10.529239	9.490621	10.509379	10.019860	9.980140	15	13	
48	12	9.470863	10.529137	9.490733	10.509267	10.019870	9.980130	48	12	
49	15	9.470965	10.529035	9.490845	10.509155	10.019880	9.980120	45	11	
50	30	9.471067	10.528933	9.490957	10.509043	10.019890	9.980110	30	10	
51	45	9.471169	10.528831	9.491068	10.508932	10.019899	9.980101	15	9	
52	13	9.471271	10.528729	9.491180	10.508820	10.019909	9.980091	47	8	
53	15	9.471373	10.528627	9.491292	10.508708	10.019919	9.980081	45	7	
54	30	9.471475	10.528525	9.491404	10.508596	10.019929	9.980071	30	6	
55	45	9.471577	10.528423	9.491515	10.508485	10.019939	9.980061	15	5	
56	14	9.471678	10.528322	9.491627	10.508373	10.019948	9.980052	46	4	
57	15	9.471780	10.528220	9.491738	10.508262	10.019958	9.980042	45	3	
58	30	9.471882	10.528118	9.491850	10.508150	10.019968	9.980032	30	2	
59	45	9.471984	10.528016	9.491962	10.508038	10.019978	9.980022	15	1	
60	15	9.472086	10.527914	9.492073	10.507927	10.019988	9.980012	45	0	
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.	
4 ^h 51 ^m .		LOG. SINES, &c						72 deg.		

1 ^h 9 ^m .		LOG. SINES, &c. (1)						17 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.472086	10.527914	9.492073	10.507927	10.019988	9.980012	45	60
1	15	9.472187	10.527813	9.492185	10.507815	10.019997	9.980003	45	59
2	30	9.472289	10.527711	9.492296	10.507704	10.020007	9.979993	30	58
3	45	9.472391	10.527609	9.492408	10.507592	10.020017	9.979983	15	57
4	16	9.472492	10.527508	9.492519	10.507481	10.020027	9.979973	44	56
5	15	9.472594	10.527406	9.492630	10.507370	10.020037	9.979963	45	55
6	30	9.472695	10.527305	9.492742	10.507258	10.020046	9.979954	30	54
7	45	9.472797	10.527203	9.492853	10.507147	10.020056	9.979944	15	53
8	17	9.472898	10.527102	9.492965	10.507035	10.020066	9.979934	43	52
9	15	9.473000	10.527000	9.493076	10.506924	10.020076	9.979924	45	51
10	30	9.473101	10.526899	9.493187	10.506813	10.020086	9.979914	30	50
11	45	9.473203	10.526797	9.493298	10.506702	10.020096	9.979904	15	49
12	18	9.473304	10.526696	9.493410	10.506590	10.020105	9.979895	42	48
13	15	9.473406	10.526594	9.493521	10.506479	10.020115	9.979885	45	47
14	30	9.473507	10.526493	9.493632	10.506368	10.020125	9.979875	30	46
15	45	9.473608	10.526392	9.493743	10.506257	10.020135	9.979865	15	45
16	19	9.473710	10.526290	9.493854	10.506146	10.020145	9.979855	41	44
17	15	9.473811	10.526189	9.493966	10.506034	10.020155	9.979845	45	43
18	30	9.473912	10.526088	9.494077	10.505923	10.020165	9.979835	30	42
19	45	9.474013	10.525987	9.494188	10.505812	10.020174	9.979826	15	41
20	20	9.474115	10.525885	9.494299	10.505701	10.020184	9.979816	40	40
21	15	9.474216	10.525784	9.494410	10.505590	10.020194	9.979806	45	39
22	30	9.474317	10.525683	9.494521	10.505479	10.020204	9.979796	30	38
23	45	9.474418	10.525582	9.494632	10.505368	10.020214	9.979786	15	37
24	21	9.474519	10.525481	9.494743	10.505257	10.020224	9.979776	39	36
25	15	9.474620	10.525380	9.494854	10.505146	10.020234	9.979766	45	35
26	30	9.474721	10.525279	9.494965	10.505035	10.020243	9.979757	30	34
27	45	9.474822	10.525178	9.495076	10.504924	10.020253	9.979747	15	33
28	22	9.474923	10.525077	9.495186	10.504814	10.020263	9.979737	38	32
29	15	9.475024	10.524976	9.495297	10.504703	10.020273	9.979727	45	31
30	30	9.475125	10.524875	9.495408	10.504592	10.020283	9.979717	30	30
31	45	9.475226	10.524774	9.495519	10.504481	10.020293	9.979707	15	29
32	23	9.475327	10.524673	9.495630	10.504370	10.020303	9.979697	37	28
33	15	9.475428	10.524572	9.495740	10.504260	10.020313	9.979687	45	27
34	30	9.475529	10.524471	9.495851	10.504149	10.020322	9.979678	30	26
35	45	9.475630	10.524370	9.495962	10.504038	10.020332	9.979668	15	25
36	24	9.475730	10.524270	9.496073	10.503927	10.020342	9.979658	36	24
37	15	9.475831	10.524169	9.496183	10.503817	10.020352	9.979648	45	23
38	30	9.475932	10.524068	9.496294	10.503706	10.020362	9.979638	30	22
39	45	9.476033	10.523967	9.496405	10.503595	10.020372	9.979628	15	21
40	25	9.476133	10.523867	9.496515	10.503485	10.020382	9.979618	35	20
41	15	9.476234	10.523766	9.496626	10.503374	10.020392	9.979608	45	19
42	30	9.476335	10.523665	9.496736	10.503264	10.020402	9.979598	30	18
43	45	9.476435	10.523565	9.496847	10.503153	10.020412	9.979588	15	17
44	26	9.476536	10.523464	9.496957	10.503043	10.020422	9.979578	34	16
45	15	9.476636	10.523364	9.497068	10.502932	10.020431	9.979569	45	15
46	30	9.476737	10.523263	9.497178	10.502822	10.020441	9.979559	30	14
47	45	9.476837	10.523163	9.497289	10.502711	10.020451	9.979549	15	13
48	27	9.476938	10.523062	9.497399	10.502601	10.020461	9.979539	33	12
49	15	9.477038	10.522962	9.497509	10.502491	10.020471	9.979529	45	11
50	30	9.477139	10.522861	9.497620	10.502380	10.020481	9.979519	30	10
51	45	9.477239	10.522761	9.497730	10.502270	10.020491	9.979509	15	9
52	28	9.477340	10.522660	9.497841	10.502159	10.020501	9.979499	32	8
53	15	9.477440	10.522560	9.497951	10.502049	10.020511	9.979489	45	7
54	30	9.477540	10.522460	9.498061	10.501939	10.020521	9.979479	30	6
55	45	9.477641	10.522359	9.498171	10.501829	10.020531	9.979469	15	5
56	29	9.477741	10.522259	9.498282	10.501718	10.020541	9.979459	31	4
57	15	9.477841	10.522159	9.498392	10.501608	10.020551	9.979449	45	3
58	30	9.477941	10.522059	9.498502	10.501498	10.020561	9.979439	30	2
59	45	9.478042	10.521958	9.498612	10.501388	10.020571	9.979429	15	1
60	30	9.478142	10.521858	9.498722	10.501278	10.020581	9.979419	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 50 ^m .		LOG. SINES, &c.						72 deg.	

1 ^h 10 ^m .		LOG. SINES, &c. (L.)						17 deg	
sec.	n	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	n	sec.
0	30	9.478142	10.521858	9.498722	10.501278	10.020581	9.979419	30	60
1	15	9.478242	10.521758	9.498832	10.501168	10.020591	9.979409	45	59
2	30	9.478342	10.521658	9.498942	10.501058	10.020600	9.979400	30	58
3	45	9.478442	10.521558	9.499053	10.500947	10.020610	9.979390	15	57
4	31	9.478542	10.521458	9.499163	10.500837	10.020620	9.979380	29	56
5	15	9.478642	10.521358	9.499273	10.500727	10.020630	9.979370	45	55
6	30	9.478742	10.521258	9.499383	10.500617	10.020640	9.979360	30	54
7	45	9.478842	10.521158	9.499493	10.500507	10.020650	9.979350	15	53
8	32	9.478942	10.521058	9.499603	10.500397	10.020660	9.979340	28	52
9	15	9.479042	10.520958	9.499712	10.500288	10.020670	9.979330	45	51
10	30	9.479142	10.520858	9.499822	10.500178	10.020680	9.979320	30	50
11	45	9.479242	10.520758	9.499932	10.500068	10.020690	9.979310	15	49
12	33	9.479342	10.520658	9.500042	10.499958	10.020700	9.979300	27	48
13	15	9.479442	10.520558	9.500152	10.499848	10.020710	9.979290	45	47
14	30	9.479542	10.520458	9.500262	10.499738	10.020720	9.979280	30	46
15	45	9.479642	10.520358	9.500372	10.499628	10.020730	9.979270	15	45
16	34	9.479741	10.520259	9.500481	10.499519	10.020740	9.979260	26	44
17	15	9.479841	10.520159	9.500591	10.499409	10.020750	9.979250	45	43
18	30	9.479941	10.520059	9.500701	10.499299	10.020760	9.979240	30	42
19	45	9.480040	10.519960	9.500811	10.499189	10.020770	9.979230	15	41
20	35	9.480140	10.519860	9.500920	10.499080	10.020780	9.979220	25	40
21	15	9.480240	10.519760	9.501030	10.498970	10.020790	9.979210	45	39
22	30	9.480339	10.519661	9.501140	10.498860	10.020800	9.979200	30	38
23	45	9.480439	10.519561	9.501249	10.498751	10.020810	9.979190	15	37
24	36	9.480538	10.519462	9.501359	10.498641	10.020820	9.979180	24	36
25	15	9.480638	10.519362	9.501468	10.498532	10.020830	9.979170	45	35
26	30	9.480738	10.519262	9.501578	10.498422	10.020840	9.979160	30	34
27	45	9.480837	10.519163	9.501687	10.498313	10.020850	9.979150	15	33
28	37	9.480937	10.519063	9.501797	10.498203	10.020860	9.979140	23	32
29	15	9.481036	10.518964	9.501906	10.498094	10.020870	9.979130	45	31
30	30	9.481135	10.518865	9.502016	10.497984	10.020880	9.979120	30	30
31	45	9.481235	10.518765	9.502125	10.497875	10.020890	9.979110	15	29
32	38	9.481334	10.518666	9.502235	10.497765	10.020900	9.979100	22	28
33	15	9.481434	10.518566	9.502344	10.497656	10.020911	9.979089	45	27
34	30	9.481533	10.518467	9.502453	10.497547	10.020921	9.979079	30	26
35	45	9.481632	10.518368	9.502563	10.497437	10.020931	9.979069	15	25
36	39	9.481731	10.518269	9.502672	10.497328	10.020941	9.979059	21	24
37	15	9.481831	10.518169	9.502781	10.497219	10.020951	9.979049	45	23
38	30	9.481930	10.518070	9.502891	10.497109	10.020961	9.979039	30	22
39	45	9.482029	10.517971	9.503000	10.497000	10.020971	9.979029	15	21
40	40	9.482128	10.517872	9.503109	10.496891	10.020981	9.979019	20	20
41	15	9.482227	10.517773	9.503218	10.496782	10.020991	9.979009	45	19
42	30	9.482327	10.517673	9.503328	10.496672	10.021001	9.978999	30	18
43	45	9.482426	10.517574	9.503437	10.496563	10.021011	9.978989	15	17
44	41	9.482525	10.517475	9.503546	10.496454	10.021021	9.978979	19	16
45	15	9.482624	10.517376	9.503655	10.496345	10.021031	9.978969	45	15
46	30	9.482723	10.517277	9.503764	10.496236	10.021041	9.978959	30	14
47	45	9.482822	10.517178	9.503873	10.496127	10.021051	9.978949	15	13
48	42	9.482921	10.517079	9.503982	10.496018	10.021061	9.978939	18	12
49	15	9.483020	10.516980	9.504091	10.495909	10.021072	9.978928	45	11
50	30	9.483119	10.516881	9.504200	10.495800	10.021082	9.978918	30	10
51	45	9.483218	10.516782	9.504309	10.495691	10.021092	9.978908	15	9
52	43	9.483316	10.516684	9.504418	10.495582	10.021102	9.978898	17	8
53	15	9.483415	10.516585	9.504527	10.495473	10.021112	9.978888	45	7
54	30	9.483514	10.516486	9.504636	10.495364	10.021122	9.978878	30	6
55	45	9.483613	10.516387	9.504745	10.495255	10.021132	9.978868	15	5
56	44	9.483712	10.516288	9.504854	10.495146	10.021142	9.978858	16	4
57	15	9.483810	10.516190	9.504963	10.495037	10.021152	9.978848	45	3
58	30	9.483909	10.516091	9.505071	10.494929	10.021162	9.978838	30	2
59	45	9.484008	10.515992	9.505180	10.494820	10.021172	9.978828	15	1
60	45	9.484107	10.515893	9.505289	10.494711	10.021183	9.978817	15	0
sec.	n	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	n	sec.
4 ^h 49 ^m .		LOG. SINES, &c.						72 deg.	

1 ^h 11 ^m .		LOG. SINES, &c. (t)						17 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.484107	10.515893	9.505289	10.494711	10.021183	9.978817	15	60
1	15	9.484205	10.515795	9.505398	10.494602	10.021193	9.978807	45	59
2	30	9.484304	10.515696	9.505507	10.494493	10.021203	9.978797	30	58
3	45	9.484402	10.515598	9.505615	10.494385	10.021213	9.978787	15	57
4	46	9.484501	10.515499	9.505724	10.494276	10.021223	9.978777	14	56
5	15	9.484600	10.515400	9.505833	10.494167	10.021233	9.978767	45	55
6	30	9.484698	10.515302	9.505941	10.494059	10.021243	9.978757	30	54
7	45	9.484797	10.515203	9.506050	10.493950	10.021253	9.978747	15	53
8	47	9.484895	10.515105	9.506159	10.493841	10.021264	9.978736	13	52
9	15	9.484994	10.515006	9.506267	10.493733	10.021274	9.978726	45	51
10	30	9.485092	10.514908	9.506376	10.493624	10.021284	9.978716	30	50
11	45	9.485190	10.514810	9.506484	10.493516	10.021294	9.978706	15	49
12	48	9.485289	10.514711	9.506593	10.493407	10.021304	9.978696	12	48
13	15	9.485387	10.514613	9.506701	10.493299	10.021314	9.978686	45	47
14	30	9.485485	10.514515	9.506810	10.493190	10.021324	9.978676	30	46
15	45	9.485584	10.514416	9.506918	10.493082	10.021335	9.978665	15	45
16	49	9.485682	10.514318	9.507027	10.492973	10.021345	9.978655	11	44
17	15	9.485780	10.514220	9.507135	10.492865	10.021355	9.978645	45	43
18	30	9.485878	10.514122	9.507243	10.492757	10.021365	9.978635	30	42
19	45	9.485977	10.514023	9.507352	10.492648	10.021375	9.978625	15	41
20	50	9.486075	10.513925	9.507460	10.492540	10.021385	9.978615	10	40
21	15	9.486173	10.513827	9.507568	10.492432	10.021395	9.978605	45	39
22	30	9.486271	10.513729	9.507677	10.492323	10.021406	9.978594	30	38
23	45	9.486369	10.513631	9.507785	10.492215	10.021416	9.978584	15	37
24	51	9.486467	10.513533	9.507893	10.492107	10.021426	9.978574	9	36
25	15	9.486565	10.513435	9.508002	10.491998	10.021436	9.978564	45	35
26	30	9.486663	10.513337	9.508110	10.491890	10.021446	9.978554	30	34
27	45	9.486761	10.513239	9.508218	10.491782	10.021456	9.978544	15	33
28	52	9.486859	10.513141	9.508326	10.491674	10.021467	9.978533	8	32
29	15	9.486957	10.513043	9.508434	10.491566	10.021477	9.978523	45	31
30	30	9.487055	10.512945	9.508542	10.491458	10.021487	9.978513	30	30
31	45	9.487153	10.512847	9.508650	10.491350	10.021497	9.978503	15	29
32	53	9.487251	10.512749	9.508759	10.491241	10.021507	9.978493	7	28
33	15	9.487349	10.512651	9.508867	10.491133	10.021518	9.978482	45	27
34	30	9.487447	10.512553	9.508975	10.491025	10.021528	9.978472	30	26
35	45	9.487545	10.512455	9.509083	10.490917	10.021538	9.978462	15	25
36	54	9.487643	10.512357	9.509191	10.490809	10.021548	9.978452	6	24
37	15	9.487740	10.512260	9.509299	10.490701	10.021558	9.978442	45	23
38	30	9.487838	10.512162	9.509407	10.490593	10.021569	9.978431	30	22
39	45	9.487936	10.512064	9.509514	10.490486	10.021579	9.978421	15	21
40	55	9.488033	10.511967	9.509622	10.490378	10.021589	9.978411	5	20
41	15	9.488131	10.511869	9.509730	10.490270	10.021599	9.978401	45	19
42	30	9.488229	10.511771	9.509838	10.490162	10.021609	9.978391	30	18
43	45	9.488326	10.511674	9.509946	10.490054	10.021620	9.978380	15	17
44	56	9.488424	10.511576	9.510054	10.489946	10.021630	9.978370	4	16
45	15	9.488522	10.511478	9.510162	10.489838	10.021640	9.978360	45	15
46	30	9.488619	10.511381	9.510269	10.489731	10.021650	9.978350	30	14
47	45	9.488717	10.511283	9.510377	10.489623	10.021661	9.978339	15	13
48	57	9.488814	10.511186	9.510485	10.489515	10.021671	9.978329	3	12
49	15	9.488912	10.511088	9.510593	10.489407	10.021681	9.978319	45	11
50	30	9.489009	10.510991	9.510700	10.489300	10.021691	9.978309	30	10
51	45	9.489107	10.510893	9.510808	10.489192	10.021701	9.978299	15	9
52	58	9.489204	10.510796	9.510916	10.489084	10.021712	9.978288	2	8
53	15	9.489301	10.510699	9.511023	10.488977	10.021722	9.978278	45	7
54	30	9.489399	10.510601	9.511131	10.488869	10.021732	9.978268	30	6
55	45	9.489496	10.510504	9.511238	10.488762	10.021742	9.978258	15	5
56	59	9.489593	10.510407	9.511346	10.488654	10.021753	9.978247	1	4
57	15	9.489691	10.510309	9.511454	10.488546	10.021763	9.978237	45	3
58	30	9.489788	10.510212	9.511561	10.488439	10.021773	9.978227	30	2
59	45	9.489885	10.510115	9.511669	10.488331	10.021783	9.978217	15	1
60	60	9.489982	10.510018	9.511776	10.488224	10.021794	9.978206	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 48 ^m .		LOG. SINES, &c.						72 deg.	

1 ^h 12 ^m .		LOG. SINES, &c. (t.)						18 deg.		
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.	
0	0	9.489982	10.510018	9.511776	10.488224	10.021794	9.978206	60	60	
1	15	9.490080	10.509920	9.511883	10.488117	10.021804	9.978196	45	59	
2	30	9.490177	10.509823	9.511991	10.488009	10.021814	9.978186	30	58	
3	45	9.490274	10.509726	9.512098	10.487902	10.021825	9.978175	15	57	
4	1	9.490371	10.509629	9.512206	10.487794	10.021835	9.978165	59	56	
5	15	9.490468	10.509532	9.512313	10.487687	10.021845	9.978155	45	55	
6	30	9.490565	10.509435	9.512420	10.487580	10.021855	9.978145	30	54	
7	45	9.490662	10.509338	9.512528	10.487472	10.021866	9.978134	15	53	
8	2	9.490759	10.509241	9.512635	10.487365	10.021876	9.978124	58	52	
9	15	9.490856	10.509144	9.512742	10.487258	10.021886	9.978114	45	51	
10	30	9.490953	10.509047	9.512850	10.487150	10.021896	9.978104	30	50	
11	45	9.491050	10.508950	9.512957	10.487043	10.021907	9.978093	15	49	
12	3	9.491147	10.508853	9.513064	10.486936	10.021917	9.978083	57	48	
13	15	9.491244	10.508756	9.513171	10.486829	10.021927	9.978073	45	47	
14	30	9.491341	10.508659	9.513278	10.486722	10.021938	9.978062	30	46	
15	45	9.491438	10.508562	9.513386	10.486614	10.021948	9.978052	15	45	
16	4	9.491534	10.508466	9.513493	10.486507	10.021958	9.978042	56	44	
17	15	9.491631	10.508369	9.513600	10.486400	10.021969	9.978031	45	43	
18	30	9.491728	10.508272	9.513707	10.486293	10.021979	9.978021	30	42	
19	45	9.491825	10.508175	9.513814	10.486186	10.021989	9.978011	15	41	
20	5	9.491922	10.508078	9.513921	10.486079	10.021999	9.978001	55	40	
21	15	9.492018	10.507982	9.514028	10.485972	10.022010	9.977990	45	39	
22	30	9.492115	10.507885	9.514135	10.485865	10.022020	9.977980	30	38	
23	45	9.492212	10.507788	9.514242	10.485758	10.022030	9.977970	15	37	
24	6	9.492308	10.507692	9.514349	10.485651	10.022041	9.977959	54	36	
25	15	9.492405	10.507595	9.514456	10.485544	10.022051	9.977949	45	35	
26	30	9.492501	10.507499	9.514563	10.485437	10.022061	9.977939	30	34	
27	45	9.492598	10.507402	9.514670	10.485330	10.022072	9.977928	15	33	
28	7	9.492695	10.507305	9.514777	10.485223	10.022082	9.977918	53	32	
29	15	9.492791	10.507209	9.514883	10.485117	10.022092	9.977908	45	31	
30	30	9.492888	10.507112	9.514990	10.485010	10.022103	9.977897	30	30	
31	45	9.492984	10.507016	9.515097	10.484903	10.022113	9.977887	15	29	
32	8	9.493081	10.506919	9.515204	10.484796	10.022123	9.977877	52	28	
33	15	9.493177	10.506823	9.515311	10.484689	10.022134	9.977866	45	27	
34	30	9.493273	10.506727	9.515417	10.484583	10.022144	9.977856	30	26	
35	45	9.493370	10.506630	9.515524	10.484476	10.022154	9.977846	15	25	
36	9	9.493466	10.506534	9.515631	10.484369	10.022165	9.977835	51	24	
37	15	9.493562	10.506438	9.515738	10.484262	10.022175	9.977825	45	23	
38	30	9.493659	10.506341	9.515844	10.484156	10.022186	9.977814	30	22	
39	45	9.493755	10.506245	9.515951	10.484049	10.022196	9.977804	15	21	
40	10	9.493851	10.506149	9.516057	10.483943	10.022206	9.977794	50	20	
41	15	9.493947	10.506053	9.516164	10.483836	10.022217	9.977783	45	19	
42	30	9.494044	10.505956	9.516271	10.483729	10.022227	9.977773	30	18	
43	45	9.494140	10.505860	9.516377	10.483623	10.022237	9.977763	15	17	
44	11	9.494236	10.505764	9.516484	10.483516	10.022248	9.977752	49	16	
45	15	9.494332	10.505668	9.516590	10.483410	10.022258	9.977742	45	15	
46	30	9.494428	10.505572	9.516697	10.483303	10.022268	9.977732	30	14	
47	45	9.494524	10.505476	9.516803	10.483197	10.022279	9.977721	15	13	
48	12	9.494620	10.505380	9.516910	10.483090	10.022289	9.977711	48	12	
49	15	9.494717	10.505283	9.517016	10.482984	10.022300	9.977700	45	11	
50	30	9.494813	10.505187	9.517123	10.482877	10.022310	9.977690	30	10	
51	45	9.494909	10.505091	9.517229	10.482771	10.022320	9.977680	15	9	
52	13	9.495005	10.504995	9.517335	10.482665	10.022331	9.977669	47	8	
53	15	9.495100	10.504900	9.517442	10.482558	10.022341	9.977659	45	7	
54	30	9.495196	10.504804	9.517548	10.482452	10.022352	9.977648	30	6	
55	45	9.495292	10.504708	9.517654	10.482346	10.022362	9.977638	15	5	
56	14	9.495388	10.504612	9.517761	10.482239	10.022372	9.977628	46	4	
57	15	9.495484	10.504516	9.517867	10.482133	10.022383	9.977617	45	3	
58	30	9.495580	10.504420	9.517973	10.482027	10.022393	9.977607	30	2	
59	45	9.495676	10.504324	9.518079	10.481921	10.022404	9.977596	15	1	
60	15	9.495772	10.504228	9.518185	10.481815	10.022414	9.977586	45	0	
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.	
4 ^h 47 ^m .		LOG. SINES, &c.						71 deg.		

1 ^h 13 ^m .		LOG. SINES, &c. (L.)						18 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.495772	10.504228	9.518185	10.481815	10.022414	9.977586	45	60
1	15	9.495867	10.504133	9.518292	10.481708	10.022424	9.977576	45	59
2	30	9.495963	10.504037	9.518398	10.481602	10.022435	9.977565	30	58
3	45	9.496059	10.503941	9.518504	10.481496	10.022445	9.977555	15	57
4	16	9.496154	10.503846	9.518610	10.481390	10.022456	9.977544	44	56
5	15	9.496250	10.503750	9.518716	10.481284	10.022466	9.977534	45	55
6	30	9.496346	10.503654	9.518822	10.481178	10.022477	9.977523	30	54
7	45	9.496441	10.503559	9.518928	10.481072	10.022487	9.977513	15	53
8	17	9.496537	10.503463	9.519034	10.480966	10.022497	9.977503	43	52
9	15	9.496633	10.503367	9.519140	10.480860	10.022508	9.977492	45	51
10	30	9.496728	10.503272	9.519246	10.480754	10.022518	9.977482	30	50
11	45	9.496824	10.503176	9.519352	10.480648	10.022529	9.977471	15	49
12	18	9.496919	10.503081	9.519458	10.480542	10.022539	9.977461	42	48
13	15	9.497015	10.502985	9.519564	10.480436	10.022550	9.977450	45	47
14	30	9.497110	10.502890	9.519670	10.480330	10.022560	9.977440	30	46
15	45	9.497206	10.502794	9.519776	10.480224	10.022571	9.977429	15	45
16	19	9.497301	10.502699	9.519882	10.480118	10.022581	9.977419	41	44
17	15	9.497396	10.502604	9.519988	10.480012	10.022591	9.977409	45	43
18	30	9.497492	10.502508	9.520094	10.479906	10.022602	9.977398	30	42
19	45	9.497587	10.502413	9.520199	10.479801	10.022612	9.977388	15	41
20	20	9.497682	10.502318	9.520305	10.479695	10.022623	9.977377	40	40
21	15	9.497778	10.502222	9.520411	10.479589	10.022633	9.977367	45	39
22	30	9.497873	10.502127	9.520517	10.479483	10.022644	9.977356	30	38
23	45	9.497968	10.502032	9.520622	10.479378	10.022654	9.977346	15	37
24	21	9.498063	10.501937	9.520728	10.479272	10.022665	9.977335	39	36
25	15	9.498159	10.501841	9.520834	10.479166	10.022675	9.977325	45	35
26	30	9.498254	10.501746	9.520939	10.479061	10.022686	9.977314	30	34
27	45	9.498349	10.501651	9.521045	10.478955	10.022696	9.977304	15	33
28	22	9.498444	10.501556	9.521151	10.478849	10.022707	9.977293	38	32
29	15	9.498539	10.501461	9.521256	10.478744	10.022717	9.977283	45	31
30	30	9.498634	10.501366	9.521362	10.478638	10.022728	9.977272	30	30
31	45	9.498729	10.501271	9.521467	10.478533	10.022738	9.977262	15	29
32	23	9.498824	10.501176	9.521573	10.478427	10.022749	9.977251	37	28
33	15	9.498919	10.501081	9.521679	10.478321	10.022759	9.977241	45	27
34	30	9.499014	10.500986	9.521784	10.478216	10.022770	9.977230	30	26
35	45	9.499109	10.500891	9.521889	10.478111	10.022780	9.977220	15	25
36	24	9.499204	10.500796	9.521995	10.478005	10.022791	9.977209	36	24
37	15	9.499299	10.500701	9.522100	10.477900	10.022801	9.977199	45	23
38	30	9.499394	10.500606	9.522206	10.477794	10.022812	9.977188	30	22
39	45	9.499489	10.500511	9.522311	10.477689	10.022822	9.977178	15	21
40	25	9.499584	10.500416	9.522417	10.477583	10.022833	9.977167	35	20
41	15	9.499679	10.500321	9.522522	10.477478	10.022843	9.977157	45	19
42	30	9.499774	10.500226	9.522627	10.477373	10.022854	9.977146	30	18
43	45	9.499868	10.500132	9.522733	10.477267	10.022864	9.977136	15	17
44	26	9.499963	10.500037	9.522838	10.477162	10.022875	9.977125	34	16
45	15	9.500058	10.499942	9.522943	10.477057	10.022885	9.977115	45	15
46	30	9.500153	10.499847	9.523048	10.476952	10.022896	9.977104	30	14
47	45	9.500247	10.499753	9.523154	10.476846	10.022906	9.977094	15	13
48	27	9.500342	10.499658	9.523259	10.476741	10.022917	9.977083	33	12
49	15	9.500437	10.499563	9.523364	10.476636	10.022927	9.977073	45	11
50	30	9.500531	10.499469	9.523469	10.476531	10.022938	9.977062	30	10
51	45	9.500626	10.499374	9.523574	10.476426	10.022948	9.977052	15	9
52	28	9.500721	10.499279	9.523679	10.476321	10.022959	9.977041	32	8
53	15	9.500815	10.499185	9.523785	10.476215	10.022970	9.977030	45	7
54	30	9.500910	10.499090	9.523890	10.476110	10.022980	9.977020	30	6
55	45	9.501004	10.498996	9.523995	10.476005	10.022991	9.977009	15	5
56	29	9.501099	10.498901	9.524100	10.475900	10.023001	9.976999	31	4
57	15	9.501193	10.498807	9.524205	10.475795	10.023012	9.976988	45	3
58	30	9.501288	10.498712	9.524310	10.475690	10.023022	9.976978	30	2
59	45	9.501382	10.498618	9.524415	10.475585	10.023033	9.976967	15	1
60	30	9.501476	10.498524	9.524520	10.475480	10.023043	9.976957	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 46 ^m .		LOG. SINES, &c.						71 deg.	

1° 14".			LOG. SINES &c. (L.)				18 deg.		
sec.	"	size.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	9.501476	10.498524	9.524520	10.475480	10.023043	9.976957	30	60
1	15	9.501571	10.498429	9.524625	10.475375	10.023054	9.976946	45	59
2	30	9.501665	10.498335	9.524730	10.475270	10.023065	9.976935	36	58
3	45	9.501759	10.498241	9.524835	10.475165	10.023075	9.976925	15	57
4	31	9.501854	10.498146	9.524939	10.475061	10.023086	9.976914	29	56
5	15	9.501948	10.498052	9.525044	10.474956	10.023096	9.976904	45	55
6	30	9.502042	10.497958	9.525149	10.474851	10.023107	9.976893	30	54
7	45	9.502137	10.497863	9.525254	10.474746	10.023118	9.976882	15	53
8	32	9.502231	10.497769	9.525359	10.474641	10.023128	9.976872	28	52
9	15	9.502325	10.497675	9.525464	10.474536	10.023139	9.976861	45	51
10	30	9.502419	10.497581	9.525568	10.474432	10.023149	9.976851	30	50
11	45	9.502513	10.497487	9.525673	10.474327	10.023160	9.976840	15	49
12	33	9.502607	10.497393	9.525778	10.474222	10.023170	9.976830	27	48
13	15	9.502702	10.497298	9.525883	10.474117	10.023181	9.976819	45	47
14	30	9.502796	10.497204	9.525987	10.474013	10.023192	9.976808	30	46
15	45	9.502890	10.497110	9.526092	10.473908	10.023202	9.976798	15	45
16	34	9.502984	10.497016	9.526197	10.473803	10.023213	9.976787	26	44
17	15	9.503078	10.496922	9.526301	10.473699	10.023223	9.976777	45	43
18	30	9.503172	10.496828	9.526406	10.473594	10.023234	9.976766	30	42
19	45	9.503266	10.496734	9.526510	10.473490	10.023245	9.976755	15	41
20	35	9.503360	10.496640	9.526615	10.473385	10.023255	9.976745	25	40
21	15	9.503454	10.496546	9.526719	10.473281	10.023266	9.976734	45	39
22	30	9.503547	10.496453	9.526824	10.473176	10.023277	9.976723	30	38
23	45	9.503641	10.496359	9.526929	10.473071	10.023287	9.976713	15	37
24	36	9.503735	10.496265	9.527033	10.472967	10.023298	9.976702	24	36
25	15	9.503829	10.496171	9.527137	10.472863	10.023308	9.976692	45	35
26	30	9.503923	10.496077	9.527242	10.472758	10.023319	9.976681	30	34
27	45	9.504017	10.495983	9.527346	10.472654	10.023330	9.976670	15	33
28	37	9.504110	10.495890	9.527451	10.472549	10.023340	9.976660	23	32
29	15	9.504204	10.495796	9.527555	10.472445	10.023351	9.976649	45	31
30	30	9.504298	10.495702	9.527659	10.472341	10.023362	9.976638	30	30
31	45	9.504392	10.495608	9.527764	10.472236	10.023372	9.976628	15	29
32	38	9.504485	10.495515	9.527868	10.472132	10.023383	9.976617	22	28
33	15	9.504579	10.495421	9.527972	10.472028	10.023394	9.976606	45	27
34	30	9.504673	10.495327	9.528077	10.471923	10.023404	9.976596	30	26
35	45	9.504766	10.495234	9.528181	10.471819	10.023415	9.976585	15	25
36	39	9.504860	10.495140	9.528285	10.471715	10.023426	9.976574	21	24
37	15	9.504953	10.495047	9.528389	10.471611	10.023436	9.976564	45	23
38	30	9.505047	10.494953	9.528494	10.471506	10.023447	9.976553	30	22
39	45	9.505140	10.494860	9.528598	10.471402	10.023458	9.976542	15	21
40	40	9.505234	10.494766	9.528702	10.471298	10.023468	9.976532	20	20
41	15	9.505327	10.494673	9.528806	10.471194	10.023479	9.976521	45	19
42	30	9.505421	10.494579	9.528910	10.471090	10.023490	9.976510	30	18
43	45	9.505514	10.494486	9.529014	10.470986	10.023500	9.976500	15	17
44	41	9.505608	10.494392	9.529119	10.470881	10.023511	9.976489	19	16
45	15	9.505701	10.494299	9.529223	10.470777	10.023522	9.976478	45	15
46	30	9.505794	10.494206	9.529327	10.470673	10.023532	9.976468	30	14
47	45	9.505888	10.494112	9.529431	10.470569	10.023543	9.976457	15	13
48	42	9.505981	10.494019	9.529535	10.470465	10.023554	9.976446	18	12
49	15	9.506074	10.493926	9.529639	10.470361	10.023564	9.976436	45	11
50	30	9.506168	10.493832	9.529743	10.470257	10.023575	9.976425	30	10
51	45	9.506261	10.493739	9.529847	10.470153	10.023586	9.976414	15	9
52	43	9.506354	10.493646	9.529950	10.470050	10.023596	9.976404	17	8
53	15	9.506447	10.493553	9.530054	10.469946	10.023607	9.976393	45	7
54	30	9.506541	10.493459	9.530158	10.469842	10.023618	9.976382	30	6
55	45	9.506634	10.493366	9.530262	10.469738	10.023629	9.976371	15	5
56	44	9.506727	10.493273	9.530366	10.469634	10.023639	9.976361	16	4
57	15	9.506820	10.493180	9.530470	10.469530	10.023650	9.976350	45	3
58	30	9.506913	10.493087	9.530574	10.469426	10.023661	9.976339	30	2
59	45	9.507006	10.492994	9.530677	10.469323	10.023671	9.976329	15	1
60	45	9.507099	10.492901	9.530781	10.469219	10.023682	9.976318	15	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4° 45".			LOG. SINES, &c.				71 deg.		

1 ^h 15 ^m .		LOG. SINES, &c. (t.)						18 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.507099	10.492901	9.530781	10.469219	10.023682	9.976318	15	60
1	15	9.507192	10.492808	9.530835	10.469115	10.023693	9.976307	45	59
2	30	9.507285	10.492715	9.530889	10.469011	10.023704	9.976296	30	58
3	45	9.507378	10.492622	9.531092	10.468908	10.023714	9.976286	15	57
4	46	9.507471	10.492529	9.531196	10.468804	10.023725	9.976275	14	56
5	15	9.507564	10.492436	9.531300	10.468700	10.023736	9.976264	45	55
6	30	9.507657	10.492343	9.531403	10.468597	10.023746	9.976254	30	54
7	45	9.507750	10.492250	9.531507	10.468493	10.023757	9.976243	15	53
8	47	9.507843	10.492157	9.531611	10.468389	10.023768	9.976232	13	52
9	15	9.507936	10.492064	9.531714	10.468286	10.023779	9.976221	45	51
10	30	9.508028	10.491972	9.531818	10.468182	10.023789	9.976211	30	50
11	45	9.508121	10.491879	9.531921	10.468079	10.023800	9.976200	15	49
12	48	9.508214	10.491786	9.532025	10.467975	10.023811	9.976189	12	48
13	15	9.508307	10.491693	9.532128	10.467872	10.023822	9.976178	45	47
14	30	9.508400	10.491600	9.532232	10.467768	10.023832	9.976168	30	46
15	45	9.508492	10.491508	9.532335	10.467665	10.023843	9.976157	15	45
16	49	9.508585	10.491415	9.532439	10.467561	10.023854	9.976146	11	44
17	15	9.508678	10.491322	9.532542	10.467458	10.023865	9.976135	45	43
18	30	9.508770	10.491230	9.532646	10.467354	10.023876	9.976124	30	42
19	45	9.508863	10.491137	9.532749	10.467251	10.023886	9.976114	15	41
20	50	9.508956	10.491044	9.532853	10.467147	10.023897	9.976103	10	40
21	15	9.509048	10.490952	9.532956	10.467044	10.023908	9.976092	45	39
22	30	9.509141	10.490859	9.533059	10.466941	10.023919	9.976081	30	38
23	45	9.509233	10.490767	9.533163	10.466837	10.023929	9.976071	15	37
24	51	9.509326	10.490674	9.533266	10.466734	10.023940	9.976060	9	36
25	15	9.509418	10.490582	9.533369	10.466631	10.023951	9.976049	45	35
26	30	9.509511	10.490489	9.533472	10.466528	10.023962	9.976038	30	34
27	45	9.509603	10.490397	9.533576	10.466424	10.023973	9.976027	15	33
28	52	9.509696	10.490304	9.533679	10.466321	10.023983	9.976017	8	32
29	15	9.509788	10.490212	9.533782	10.466218	10.023994	9.976006	45	31
30	30	9.509880	10.490120	9.533885	10.466115	10.024005	9.975995	30	30
31	45	9.509973	10.490027	9.533988	10.466012	10.024016	9.975984	15	29
32	53	9.510065	10.489935	9.534092	10.465908	10.024026	9.975974	7	28
33	15	9.510157	10.489843	9.534195	10.465805	10.024037	9.975963	45	27
34	30	9.510250	10.489750	9.534298	10.465702	10.024048	9.975952	30	26
35	45	9.510342	10.489658	9.534401	10.465599	10.024059	9.975941	15	25
36	54	9.510434	10.489566	9.534504	10.465496	10.024070	9.975930	6	24
37	15	9.510526	10.489474	9.534607	10.465393	10.024081	9.975919	45	23
38	30	9.510619	10.489381	9.534710	10.465290	10.024091	9.975909	30	22
39	45	9.510711	10.489289	9.534813	10.465187	10.024102	9.975898	15	21
40	55	9.510803	10.489197	9.534916	10.465084	10.024113	9.975887	5	20
41	15	9.510895	10.489105	9.535019	10.464981	10.024124	9.975876	45	19
42	30	9.510987	10.489013	9.535122	10.464878	10.024135	9.975865	30	18
43	45	9.511079	10.488921	9.535225	10.464775	10.024145	9.975855	15	17
44	56	9.511172	10.488828	9.535328	10.464672	10.024156	9.975844	4	16
45	15	9.511264	10.488736	9.535431	10.464569	10.024167	9.975833	45	15
46	30	9.511356	10.488644	9.535534	10.464466	10.024178	9.975822	30	14
47	45	9.511448	10.488552	9.535636	10.464364	10.024189	9.975811	15	13
48	57	9.511540	10.488460	9.535739	10.464261	10.024200	9.975800	3	12
49	15	9.511632	10.488368	9.535842	10.464158	10.024211	9.975789	45	11
50	30	9.511724	10.488276	9.535945	10.464055	10.024221	9.975779	30	10
51	45	9.511815	10.488185	9.536048	10.463952	10.024232	9.975768	15	9
52	58	9.511907	10.488093	9.536150	10.463850	10.024243	9.975757	2	8
53	15	9.511999	10.488001	9.536253	10.463747	10.024254	9.975746	45	7
54	30	9.512091	10.487909	9.536356	10.463644	10.024265	9.975735	30	6
55	45	9.512183	10.487817	9.536459	10.463541	10.024276	9.975724	15	5
56	59	9.512275	10.487725	9.536561	10.463439	10.024287	9.975713	1	4
57	15	9.512367	10.487633	9.536664	10.463336	10.024297	9.975703	45	3
58	30	9.512458	10.487542	9.536767	10.463233	10.024308	9.975692	30	2
59	45	9.512550	10.487450	9.536869	10.463131	10.024319	9.975681	15	1
60	60	9.512642	10.487358	9.536972	10.463028	10.024330	9.975670	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 44 ^m .		LOG. SINES, &c.						71 deg.	

1 ^h 16 ^m .		LOG. SINES, &c. (L.)						19 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.512642	10.487358	9.536972	10.463028	10.024330	9.975670	60	60
1	15	9.512734	10.487266	9.537074	10.462926	10.024341	9.975659	45	59
2	30	9.512825	10.487175	9.537177	10.462823	10.024352	9.975648	30	58
3	45	9.512917	10.487083	9.537280	10.462720	10.024363	9.975637	15	57
4	1	9.513009	10.486991	9.537382	10.462618	10.024374	9.975626	59	56
5	15	9.513100	10.486900	9.537485	10.462515	10.024384	9.975616	45	55
6	30	9.513192	10.486808	9.537587	10.462413	10.024395	9.975605	30	54
7	45	9.513283	10.486717	9.537690	10.462310	10.024406	9.975594	15	53
8	2	9.513375	10.486625	9.537792	10.462208	10.024417	9.975583	58	52
9	15	9.513466	10.486534	9.537894	10.462106	10.024428	9.975572	45	51
10	30	9.513558	10.486442	9.537997	10.462003	10.024439	9.975561	30	50
11	45	9.513650	10.486350	9.538099	10.461901	10.024450	9.975550	15	49
12	3	9.513741	10.486259	9.538202	10.461798	10.024461	9.975539	57	48
13	15	9.513832	10.486168	9.538304	10.461696	10.024472	9.975528	45	47
14	30	9.513924	10.486076	9.538406	10.461594	10.024482	9.975518	30	46
15	45	9.514015	10.485985	9.538509	10.461491	10.024493	9.975507	15	45
16	4	9.514107	10.485893	9.538611	10.461389	10.024504	9.975496	56	44
17	15	9.514198	10.485802	9.538713	10.461287	10.024515	9.975485	45	43
18	30	9.514289	10.485711	9.538815	10.461185	10.024526	9.975474	30	42
19	45	9.514381	10.485619	9.538918	10.461082	10.024537	9.975463	15	41
20	5	9.514472	10.485528	9.539020	10.460980	10.024548	9.975452	55	40
21	15	9.514563	10.485437	9.539122	10.460878	10.024559	9.975441	45	39
22	30	9.514655	10.485345	9.539224	10.460776	10.024570	9.975430	30	38
23	45	9.514746	10.485254	9.539327	10.460673	10.024581	9.975419	15	37
24	6	9.514837	10.485163	9.539429	10.460571	10.024592	9.975408	54	36
25	15	9.514928	10.485072	9.539531	10.460469	10.024603	9.975397	45	35
26	30	9.515019	10.484981	9.539633	10.460367	10.024614	9.975386	30	34
27	45	9.515111	10.484889	9.539735	10.460265	10.024625	9.975375	15	33
28	7	9.515202	10.484798	9.539837	10.460163	10.024635	9.975365	53	32
29	15	9.515293	10.484707	9.539939	10.460061	10.024646	9.975354	45	31
30	30	9.515384	10.484616	9.540041	10.459959	10.024657	9.975343	30	30
31	45	9.515475	10.484525	9.540143	10.459857	10.024668	9.975332	15	29
32	8	9.515566	10.484434	9.540245	10.459755	10.024679	9.975321	52	28
33	15	9.515657	10.484343	9.540347	10.459653	10.024690	9.975310	45	27
34	30	9.515748	10.484252	9.540449	10.459551	10.024701	9.975299	30	26
35	45	9.515839	10.484161	9.540551	10.459449	10.024712	9.975288	15	25
36	9	9.515930	10.484070	9.540653	10.459347	10.024723	9.975277	51	24
37	15	9.516021	10.483979	9.540755	10.459245	10.024734	9.975266	45	23
38	30	9.516112	10.483888	9.540857	10.459143	10.024745	9.975255	30	22
39	45	9.516203	10.483797	9.540959	10.459041	10.024756	9.975244	15	21
40	10	9.516294	10.483706	9.541061	10.458939	10.024767	9.975233	50	20
41	15	9.516384	10.483616	9.541162	10.458838	10.024778	9.975222	45	19
42	30	9.516475	10.483525	9.541264	10.458736	10.024789	9.975211	30	18
43	45	9.516566	10.483434	9.541366	10.458634	10.024800	9.975200	15	17
44	11	9.516657	10.483343	9.541468	10.458532	10.024811	9.975189	49	16
45	15	9.516748	10.483252	9.541570	10.458430	10.024822	9.975178	45	15
46	30	9.516838	10.483162	9.541671	10.458329	10.024833	9.975167	30	14
47	45	9.516929	10.483071	9.541773	10.458227	10.024844	9.975156	15	13
48	12	9.517020	10.482980	9.541875	10.458125	10.024855	9.975145	48	12
49	15	9.517110	10.482890	9.541976	10.458024	10.024866	9.975134	45	11
50	30	9.517201	10.482799	9.542078	10.457922	10.024877	9.975123	30	10
51	45	9.517292	10.482708	9.542180	10.457820	10.024888	9.975112	15	9
52	13	9.517382	10.482618	9.542281	10.457719	10.024899	9.975101	47	8
53	15	9.517473	10.482527	9.542383	10.457617	10.024910	9.975090	45	7
54	30	9.517564	10.482436	9.542484	10.457516	10.024921	9.975079	30	6
55	45	9.517654	10.482346	9.542586	10.457414	10.024932	9.975068	15	5
56	14	9.517745	10.482255	9.542688	10.457312	10.024943	9.975057	46	4
57	15	9.517835	10.482165	9.542789	10.457211	10.024954	9.975046	45	3
58	30	9.517926	10.482074	9.542891	10.457109	10.024965	9.975035	30	2
59	45	9.518016	10.481984	9.542992	10.457008	10.024976	9.975024	15	1
60	15	9.518107	10.481893	9.543094	10.456906	10.024987	9.975013	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 43 ^m .		LOG. SINES, &c.						70 deg.	

1 ^h 17 ^m .				LOG. SINES, &c. (t.)				19 deg.			
sec.	"	sine.	coscant.	tangrnt.	cotangrnt.	secant.	cotine.	"	"	sec.	
0	15	9.518107	10.481893	9.543004	10.456906	10.024987	9.975013		45	60	
1	15	9.518197	10.481803	9.543195	10.456805	10.024998	9.975002		45	59	
2	30	9.518287	10.481713	9.543297	10.456703	10.025009	9.974991		30	58	
3	45	9.518378	10.481622	9.543398	10.456602	10.025020	9.974980		15	57	
4	16	9.518468	10.481532	9.543499	10.456501	10.025031	9.974969		44	56	
5	15	9.518559	10.481441	9.543601	10.456399	10.025042	9.974958		45	55	
6	30	9.518649	10.481351	9.543702	10.456298	10.025053	9.974947		30	54	
7	45	9.518739	10.481261	9.543803	10.456197	10.025064	9.974936		15	53	
8	17	9.518829	10.481171	9.543905	10.456095	10.025075	9.974925		43	52	
9	15	9.518920	10.481080	9.544006	10.455994	10.025086	9.974914		45	51	
10	30	9.519010	10.480990	9.544107	10.455893	10.025098	9.974902		30	50	
11	45	9.519100	10.480900	9.544209	10.455791	10.025109	9.974891		15	49	
12	18	9.519190	10.480810	9.544310	10.455690	10.025120	9.974880		42	48	
13	15	9.519281	10.480719	9.544411	10.455589	10.025131	9.974869		45	47	
14	30	9.519371	10.480629	9.544512	10.455488	10.025142	9.974858		30	46	
15	45	9.519461	10.480539	9.544614	10.455386	10.025153	9.974847		15	45	
16	19	9.519551	10.480449	9.544715	10.455285	10.025164	9.974836		41	44	
17	15	9.519641	10.480359	9.544816	10.455184	10.025175	9.974825		45	43	
18	30	9.519731	10.480269	9.544917	10.455083	10.025186	9.974814		30	42	
19	45	9.519821	10.480179	9.545018	10.454982	10.025197	9.974803		15	41	
20	20	9.519911	10.480089	9.545119	10.454881	10.025208	9.974792		40	40	
21	15	9.520001	10.479999	9.545220	10.454780	10.025219	9.974781		45	39	
22	30	9.520091	10.479909	9.545321	10.454679	10.025230	9.974770		30	38	
23	45	9.520181	10.479819	9.545423	10.454577	10.025241	9.974759		15	37	
24	21	9.520271	10.479729	9.545524	10.454476	10.025253	9.974747		39	36	
25	15	9.520361	10.479639	9.545625	10.454375	10.025264	9.974736		45	35	
26	30	9.520451	10.479549	9.545726	10.454274	10.025275	9.974725		30	34	
27	45	9.520541	10.479459	9.545827	10.454173	10.025286	9.974714		15	33	
28	22	9.520631	10.479369	9.545928	10.454072	10.025297	9.974703		38	32	
29	15	9.520720	10.479280	9.546028	10.453972	10.025308	9.974692		45	31	
30	30	9.520810	10.479190	9.546129	10.453871	10.025319	9.974681		30	30	
31	45	9.520900	10.479100	9.546230	10.453770	10.025330	9.974670		15	29	
32	23	9.520990	10.479010	9.546331	10.453669	10.025341	9.974659		37	28	
33	15	9.521080	10.478920	9.546432	10.453568	10.025352	9.974648		45	27	
34	30	9.521169	10.478831	9.546533	10.453467	10.025363	9.974636		30	26	
35	45	9.521259	10.478741	9.546634	10.453366	10.025375	9.974625		15	25	
36	24	9.521349	10.478651	9.546735	10.453265	10.025386	9.974614		36	24	
37	15	9.521438	10.478562	9.546835	10.453165	10.025397	9.974603		45	23	
38	30	9.521528	10.478472	9.546936	10.453064	10.025408	9.974592		30	22	
39	45	9.521618	10.478382	9.547037	10.452963	10.025419	9.974581		15	21	
40	25	9.521707	10.478293	9.547138	10.452862	10.025430	9.974570		35	20	
41	15	9.521797	10.478203	9.547238	10.452762	10.025441	9.974559		45	19	
42	30	9.521886	10.478114	9.547339	10.452661	10.025453	9.974547		30	18	
43	45	9.521976	10.478024	9.547440	10.452560	10.025464	9.974536		15	17	
44	26	9.522066	10.477934	9.547540	10.452460	10.025475	9.974525		34	16	
45	15	9.522155	10.477845	9.547641	10.452359	10.025486	9.974514		45	15	
46	30	9.522245	10.477755	9.547742	10.452258	10.025497	9.974503		30	14	
47	45	9.522334	10.477666	9.547842	10.452158	10.025508	9.974492		15	13	
48	27	9.522423	10.477577	9.547943	10.452057	10.025519	9.974481		33	12	
49	15	9.522513	10.477487	9.548043	10.451957	10.025531	9.974469		45	11	
50	30	9.522602	10.477398	9.548144	10.451856	10.025542	9.974458		30	10	
51	45	9.522692	10.477308	9.548245	10.451755	10.025553	9.974447		15	9	
52	28	9.522781	10.477219	9.548345	10.451655	10.025564	9.974436		32	8	
53	15	9.522870	10.477130	9.548446	10.451554	10.025575	9.974425		45	7	
54	30	9.522960	10.477040	9.548546	10.451454	10.025586	9.974414		30	6	
55	45	9.523049	10.476951	9.548647	10.451353	10.025598	9.974402		15	5	
56	29	9.523138	10.476862	9.548747	10.451253	10.025609	9.974391		31	4	
57	15	9.523228	10.476772	9.548847	10.451153	10.025620	9.974380		45	3	
58	30	9.523317	10.476683	9.548948	10.451052	10.025631	9.974369		30	2	
59	45	9.523406	10.476594	9.549048	10.450952	10.025642	9.974358		15	1	
60	30	9.523495	10.476505	9.549149	10.450851	10.025653	9.974347		30	0	
sec.	"	cosine.	secant.	cotangent.	tangent	coscant.	sine.	"	"	sec.	
4 ^h 42 ^m .				LOG. SINES, &c.				70 deg.			

1° 18'.		LOG. SINES, &c. (t.)						19 deg.	
c.	"	sine.	cosecant	tangrnt.	cotangent.	secant.	cosine.	"	sec.
0	30	9.523495	10.476505	9.549149	10.450851	10.026653	9.974347	30	60
1	15	9.523584	10.476416	9.549249	10.450751	10.026665	9.974335	45	59
2	30	9.523674	10.476326	9.549349	10.450651	10.026676	9.974324	30	58
3	45	9.523763	10.476237	9.549450	10.450550	10.026687	9.974313	15	57
4	31	9.523852	10.476148	9.549550	10.450450	10.026698	9.974303	29	56
5	15	9.523941	10.476059	9.549650	10.450350	10.026709	9.974291	45	55
6	30	9.524030	10.475970	9.549751	10.450249	10.026721	9.974279	30	54
7	45	9.524119	10.475881	9.549851	10.450149	10.026732	9.974268	15	53
8	32	9.524208	10.475792	9.549951	10.450049	10.026743	9.974257	28	52
9	15	9.524297	10.475703	9.550051	10.449949	10.026754	9.974246	45	51
0	30	9.524386	10.475614	9.550151	10.449849	10.026765	9.974235	30	50
1	45	9.524475	10.475525	9.550252	10.449748	10.026777	9.974223	15	49
2	33	9.524564	10.475436	9.550352	10.449648	10.026788	9.974212	27	48
3	15	9.524653	10.475347	9.550452	10.449548	10.026799	9.974201	45	47
4	30	9.524742	10.475258	9.550552	10.449448	10.026810	9.974190	30	46
5	45	9.524831	10.475169	9.550652	10.449348	10.026822	9.974178	15	45
6	34	9.524920	10.475080	9.550752	10.449248	10.026833	9.974167	26	44
7	15	9.525008	10.474992	9.550852	10.449148	10.026844	9.974156	45	43
8	30	9.525097	10.474903	9.550952	10.449048	10.026855	9.974145	30	42
9	45	9.525186	10.474814	9.551052	10.448948	10.026866	9.974134	15	41
0	35	9.525275	10.474725	9.551152	10.448848	10.026878	9.974122	25	40
1	15	9.525364	10.474636	9.551252	10.448748	10.026889	9.974111	45	39
2	30	9.525453	10.474548	9.551352	10.448648	10.026900	9.974100	30	38
3	45	9.525541	10.474459	9.551452	10.448548	10.026911	9.974089	15	37
4	36	9.525630	10.474370	9.551552	10.448448	10.026923	9.974077	24	36
5	15	9.525718	10.474282	9.551652	10.448348	10.026934	9.974066	45	35
6	30	9.525807	10.474193	9.551752	10.448248	10.026945	9.974055	30	34
7	45	9.525896	10.474104	9.551852	10.448148	10.026956	9.974044	15	33
8	37	9.525984	10.474016	9.551952	10.448048	10.026968	9.974032	23	32
9	15	9.526073	10.473927	9.552052	10.447948	10.026979	9.974021	45	31
0	30	9.526162	10.473838	9.552152	10.447848	10.026990	9.974010	30	30
1	45	9.526250	10.473750	9.552252	10.447748	10.026999	9.973999	15	29
2	38	9.526339	10.473661	9.552351	10.447649	10.026999	9.973987	22	28
3	15	9.526427	10.473573	9.552451	10.447549	10.026999	9.973976	45	27
4	30	9.526516	10.473484	9.552551	10.447449	10.026999	9.973965	30	26
5	45	9.526604	10.473396	9.552651	10.447349	10.026999	9.973953	15	25
6	39	9.526693	10.473307	9.552750	10.447250	10.026999	9.973942	21	24
7	15	9.526781	10.473219	9.552850	10.447150	10.026999	9.973931	45	23
8	30	9.526870	10.473130	9.552950	10.447050	10.026999	9.973920	30	22
9	45	9.526958	10.473042	9.553050	10.446950	10.026999	9.973908	15	21
0	40	9.527046	10.472954	9.553149	10.446851	10.026999	9.973897	20	20
1	15	9.527135	10.472865	9.553249	10.446751	10.026999	9.973886	45	19
2	30	9.527223	10.472777	9.553348	10.446652	10.026999	9.973874	30	18
3	45	9.527311	10.472689	9.553448	10.446552	10.026999	9.973863	15	17
4	41	9.527400	10.472600	9.553548	10.446452	10.026999	9.973852	19	16
5	15	9.527488	10.472512	9.553647	10.446353	10.026999	9.973841	45	15
6	30	9.527576	10.472424	9.553747	10.446253	10.026999	9.973829	30	14
7	45	9.527664	10.472336	9.553846	10.446154	10.026999	9.973818	15	13
8	42	9.527753	10.472247	9.553946	10.446054	10.026999	9.973807	18	12
9	15	9.527841	10.472159	9.554045	10.445955	10.026999	9.973795	45	11
0	30	9.527929	10.472071	9.554145	10.445855	10.026999	9.973784	30	10
1	45	9.528017	10.471983	9.554244	10.445756	10.026999	9.973773	15	9
2	43	9.528105	10.471895	9.554344	10.445656	10.026999	9.973761	17	8
3	15	9.528193	10.471807	9.554443	10.445557	10.026999	9.973750	45	7
4	30	9.528281	10.471719	9.554543	10.445457	10.026999	9.973739	30	6
5	45	9.528370	10.471630	9.554642	10.445358	10.026999	9.973727	15	5
6	44	9.528458	10.471542	9.554741	10.445259	10.026999	9.973716	16	4
7	15	9.528546	10.471454	9.554841	10.445159	10.026999	9.973705	45	3
8	30	9.528634	10.471366	9.554940	10.445060	10.026999	9.973693	30	2
9	45	9.528722	10.471278	9.555039	10.444961	10.026999	9.973682	15	1
0	45	9.528810	10.471190	9.555139	10.444861	10.026999	9.973671	15	0
c.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4° 41'.		LOG. SINES, &c.						70 deg.	

1 st 19 ^m .		LOG. SINES, &c. (t.)						19 deg.	
sec.	' "	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	' "	sec.
0	45	9.528810	10.471190	9.555139	10.444861	10.026329	9.973671	15	60
1	15	9.528898	10.471102	9.555238	10.444762	10.026341	9.973659	45	59
2	30	9.528986	10.471014	9.555337	10.444663	10.026352	9.973648	30	58
3	45	9.529073	10.470927	9.555437	10.444563	10.026363	9.973637	15	57
4	46	9.529161	10.470839	9.555536	10.444464	10.026375	9.973625	14	56
5	15	9.529249	10.470751	9.555635	10.444365	10.026386	9.973614	45	55
6	30	9.529337	10.470663	9.555734	10.444266	10.026397	9.973603	30	54
7	45	9.529425	10.470575	9.555833	10.444167	10.026409	9.973591	15	53
8	47	9.529513	10.470487	9.555933	10.444067	10.026420	9.973580	13	52
9	15	9.529601	10.470399	9.556032	10.443968	10.026431	9.973569	45	51
10	30	9.529688	10.470312	9.556131	10.443869	10.026443	9.973557	30	50
11	45	9.529776	10.470224	9.556230	10.443770	10.026454	9.973546	15	49
12	48	9.529864	10.470136	9.556329	10.443671	10.026465	9.973535	12	48
13	15	9.529951	10.470049	9.556428	10.443572	10.026477	9.973523	45	47
14	30	9.530039	10.469961	9.556527	10.443473	10.026488	9.973512	30	46
15	45	9.530127	10.469873	9.556626	10.443374	10.026500	9.973500	15	45
16	49	9.530215	10.469785	9.556725	10.443275	10.026511	9.973489	11	44
17	15	9.530302	10.469698	9.556824	10.443176	10.026522	9.973478	45	43
18	30	9.530390	10.469610	9.556923	10.443077	10.026534	9.973466	30	42
19	46	9.530477	10.469523	9.557022	10.442978	10.026545	9.973455	15	41
20	50	9.530565	10.469435	9.557121	10.442879	10.026557	9.973443	10	40
21	15	9.530652	10.469348	9.557220	10.442780	10.026568	9.973432	45	39
22	30	9.530740	10.469260	9.557319	10.442681	10.026579	9.973421	30	38
23	45	9.530828	10.469172	9.557418	10.442582	10.026591	9.973409	15	37
24	51	9.530915	10.469085	9.557517	10.442483	10.026602	9.973398	9	36
25	15	9.531002	10.468998	9.557616	10.442384	10.026613	9.973387	45	35
26	30	9.531090	10.468910	9.557715	10.442285	10.026625	9.973375	30	34
27	45	9.531177	10.468823	9.557814	10.442186	10.026636	9.973364	15	33
28	52	9.531265	10.468735	9.557912	10.442088	10.026648	9.973352	8	32
29	15	9.531352	10.468648	9.558011	10.441989	10.026659	9.973341	45	31
30	30	9.531440	10.468560	9.558110	10.441890	10.026671	9.973329	30	30
31	45	9.531527	10.468473	9.558209	10.441791	10.026682	9.973318	15	29
32	53	9.531614	10.468386	9.558308	10.441692	10.026693	9.973307	7	28
33	15	9.531702	10.468298	9.558406	10.441594	10.026705	9.973295	45	27
34	30	9.531789	10.468211	9.558505	10.441495	10.026716	9.973284	30	26
35	45	9.531876	10.468124	9.558604	10.441396	10.026728	9.973272	15	25
36	54	9.531963	10.468037	9.558702	10.441298	10.026739	9.973261	6	24
37	15	9.532051	10.467949	9.558801	10.441199	10.026751	9.973249	45	23
38	30	9.532138	10.467862	9.558900	10.441100	10.026762	9.973238	30	22
39	45	9.532225	10.467775	9.558998	10.441002	10.026773	9.973227	15	21
40	55	9.532312	10.467688	9.559097	10.440903	10.026785	9.973215	5	20
41	15	9.532399	10.467601	9.559196	10.440804	10.026796	9.973204	45	19
42	30	9.532487	10.467513	9.559294	10.440706	10.026808	9.973192	30	18
43	45	9.532574	10.467426	9.559393	10.440607	10.026819	9.973181	15	17
44	56	9.532661	10.467339	9.559491	10.440509	10.026831	9.973169	4	16
45	15	9.532748	10.467252	9.559590	10.440410	10.026842	9.973158	45	15
46	30	9.532835	10.467165	9.559688	10.440312	10.026854	9.973146	30	14
47	45	9.532922	10.467078	9.559787	10.440213	10.026865	9.973135	15	13
48	57	9.533009	10.466991	9.559885	10.440115	10.026876	9.973124	3	12
49	15	9.533096	10.466904	9.559984	10.440016	10.026888	9.973112	45	11
50	30	9.533183	10.466817	9.560082	10.439918	10.026899	9.973101	30	10
51	45	9.533270	10.466730	9.560181	10.439819	10.026911	9.973089	15	9
52	58	9.533357	10.466643	9.560279	10.439721	10.026922	9.973078	2	8
53	15	9.533444	10.466556	9.560378	10.439622	10.026934	9.973066	45	7
54	30	9.533531	10.466469	9.560476	10.439524	10.026945	9.973055	30	6
55	45	9.533618	10.466382	9.560574	10.439426	10.026957	9.973043	15	5
56	59	9.533704	10.466296	9.560673	10.439327	10.026968	9.973032	1	4
57	15	9.533791	10.466209	9.560771	10.439229	10.026980	9.973020	45	3
58	30	9.533878	10.466122	9.560869	10.439131	10.026991	9.973009	30	2
59	45	9.533965	10.466035	9.560968	10.439032	10.027003	9.972997	15	1
60	60	9.534052	10.465948	9.561066	10.438934	10.027014	9.972986	0	0
sec.	' "	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	' "	sec.
4 th 40 ^m		LOG. SINES, &c.						70 deg.	

1 ^h 20 ^m		LOG. SINES, &c. (1.)						20 deg.		
sec.	"	sine.	cosecant	tangent.	cotangent.	secant.	cosine.	"	sec.	
0	0	9.534052	10.465948	9.561066	10.438934	10.027014	9.972986	60	60	
1	15	9.534138	10.465862	9.561164	10.438836	10.027026	9.972974	45	59	
2	30	9.534225	10.465775	9.561262	10.438738	10.027037	9.972963	30	58	
3	45	9.534312	10.465688	9.561361	10.438639	10.027049	9.972951	15	57	
4	1	9.534399	10.465601	9.561459	10.438541	10.027060	9.972940	59	56	
5	15	9.534485	10.465515	9.561557	10.438443	10.027072	9.972928	45	55	
6	30	9.534572	10.465428	9.561655	10.438345	10.027083	9.972917	30	54	
7	45	9.534659	10.465341	9.561753	10.438247	10.027095	9.972905	15	53	
8	2	9.534745	10.465255	9.561851	10.438149	10.027106	9.972894	58	52	
9	15	9.534832	10.465168	9.561950	10.438050	10.027118	9.972882	45	51	
10	30	9.534918	10.465082	9.562048	10.437952	10.027129	9.972871	30	50	
11	45	9.535005	10.464995	9.562146	10.437854	10.027141	9.972859	15	49	
12	3	9.535091	10.464909	9.562244	10.437756	10.027152	9.972848	57	48	
13	15	9.535178	10.464822	9.562342	10.437658	10.027164	9.972836	45	47	
14	30	9.535265	10.464735	9.562440	10.437560	10.027175	9.972825	30	46	
15	45	9.535351	10.464649	9.562538	10.437462	10.027187	9.972813	15	45	
16	4	9.535437	10.464563	9.562636	10.437364	10.027198	9.972802	56	44	
17	15	9.535524	10.464476	9.562734	10.437266	10.027210	9.972790	45	43	
18	30	9.535610	10.464390	9.562832	10.437168	10.027222	9.972778	30	42	
19	45	9.535697	10.464303	9.562930	10.437070	10.027233	9.972767	15	41	
20	5	9.535783	10.464217	9.563028	10.436972	10.027245	9.972755	55	40	
21	15	9.535870	10.464130	9.563126	10.436874	10.027256	9.972744	45	39	
22	30	9.535956	10.464044	9.563224	10.436776	10.027268	9.972732	30	38	
23	45	9.536042	10.463958	9.563321	10.436679	10.027279	9.972721	15	37	
24	6	9.536129	10.463871	9.563419	10.436581	10.027291	9.972709	54	36	
25	15	9.536215	10.463785	9.563517	10.436483	10.027302	9.972698	45	35	
26	30	9.536301	10.463699	9.563615	10.436385	10.027314	9.972686	30	34	
27	45	9.536387	10.463613	9.563713	10.436287	10.027326	9.972674	15	33	
28	7	9.536474	10.463526	9.563811	10.436189	10.027337	9.972663	53	32	
29	15	9.536560	10.463440	9.563908	10.436092	10.027349	9.972651	45	31	
30	30	9.536646	10.463354	9.564006	10.435994	10.027360	9.972640	30	30	
31	45	9.536732	10.463268	9.564104	10.435896	10.027372	9.972628	15	29	
32	8	9.536818	10.463182	9.564202	10.435798	10.027383	9.972617	52	28	
33	15	9.536904	10.463096	9.564299	10.435701	10.027395	9.972605	45	27	
34	30	9.536991	10.463009	9.564397	10.435603	10.027407	9.972593	30	26	
35	45	9.537077	10.462923	9.564495	10.435505	10.027418	9.972582	15	25	
36	9	9.537163	10.462837	9.564592	10.435408	10.027430	9.972570	51	24	
37	15	9.537249	10.462751	9.564690	10.435310	10.027441	9.972559	45	23	
38	30	9.537335	10.462665	9.564788	10.435212	10.027453	9.972547	30	22	
39	45	9.537421	10.462579	9.564885	10.435115	10.027465	9.972535	15	21	
40	10	9.537507	10.462493	9.564983	10.435017	10.027476	9.972524	50	20	
41	15	9.537593	10.462407	9.565081	10.434919	10.027488	9.972512	45	19	
42	30	9.537679	10.462321	9.565178	10.434822	10.027499	9.972501	30	18	
43	45	9.537765	10.462235	9.565276	10.434724	10.027511	9.972489	15	17	
44	11	9.537851	10.462149	9.565373	10.434627	10.027523	9.972477	49	16	
45	15	9.537937	10.462063	9.565471	10.434529	10.027534	9.972466	45	15	
46	30	9.538023	10.461977	9.565568	10.434432	10.027546	9.972454	30	14	
47	45	9.538108	10.461892	9.565666	10.434334	10.027557	9.972443	15	13	
48	12	9.538194	10.461806	9.565763	10.434237	10.027569	9.972431	48	12	
49	15	9.538280	10.461720	9.565861	10.434139	10.027581	9.972419	45	11	
50	30	9.538366	10.461634	9.565958	10.434042	10.027592	9.972408	30	10	
51	45	9.538452	10.461548	9.566056	10.433944	10.027604	9.972396	15	9	
52	13	9.538537	10.461463	9.566153	10.433847	10.027616	9.972384	47	8	
53	15	9.538623	10.461377	9.566250	10.433750	10.027627	9.972373	45	7	
54	30	9.538709	10.461291	9.566348	10.433652	10.027639	9.972361	30	6	
55	45	9.538795	10.461205	9.566445	10.433555	10.027650	9.972350	15	5	
56	14	9.538880	10.461120	9.566542	10.433458	10.027662	9.972338	46	4	
57	15	9.538966	10.461034	9.566640	10.433360	10.027674	9.972326	45	3	
58	30	9.539052	10.460948	9.566737	10.433263	10.027685	9.972315	30	2	
59	45	9.539137	10.460863	9.566834	10.433166	10.027697	9.972303	15	1	
60	15	9.539223	10.460777	9.566932	10.433068	10.027709	9.972291	45	0	
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.	
4 ^h 39 ^m		LOG. SINES, &c.						69 deg.		

1 ^h 21 ^m .		LOG. SINES, &c. (t.)						20 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.539223	10.460777	9.566032	10.433068	10.027709	9.972291	45	60
1	15	9.539309	10.460691	9.567029	10.432971	10.027720	9.972280	45	59
2	30	9.539394	10.460606	9.567126	10.432874	10.027732	9.972268	30	58
3	45	9.539480	10.460520	9.567223	10.432777	10.027744	9.972256	15	57
4	16	9.539565	10.460435	9.567320	10.432680	10.027755	9.972245	44	56
5	15	9.539651	10.460349	9.567418	10.432582	10.027767	9.972233	45	55
6	30	9.539736	10.460264	9.567515	10.432485	10.027779	9.972221	30	54
7	45	9.539822	10.460178	9.567612	10.432388	10.027790	9.972210	15	53
8	17	9.539907	10.460093	9.567709	10.432291	10.027802	9.972198	43	52
9	15	9.539993	10.460007	9.567806	10.432194	10.027814	9.972186	45	51
10	30	9.540078	10.459922	9.567903	10.432097	10.027825	9.972175	30	50
11	45	9.540163	10.459837	9.568000	10.432000	10.027837	9.972163	15	49
12	18	9.540249	10.459751	9.568097	10.431903	10.027849	9.972151	42	48
13	15	9.540334	10.459666	9.568195	10.431805	10.027860	9.972140	45	47
14	30	9.540420	10.459580	9.568292	10.431708	10.027872	9.972128	30	46
15	45	9.540505	10.459495	9.568389	10.431611	10.027884	9.972116	15	45
16	19	9.540590	10.459410	9.568486	10.431514	10.027895	9.972105	41	44
17	15	9.540676	10.459324	9.568583	10.431417	10.027907	9.972093	45	43
18	30	9.540761	10.459239	9.568680	10.431320	10.027919	9.972081	30	42
19	45	9.540846	10.459154	9.568777	10.431223	10.027930	9.972070	15	41
20	20	9.540931	10.459069	9.568873	10.431127	10.027942	9.972058	40	40
21	15	9.541017	10.458983	9.568970	10.431030	10.027954	9.972046	45	39
22	30	9.541102	10.458898	9.569067	10.430933	10.027966	9.972034	30	38
23	45	9.541187	10.458813	9.569164	10.430836	10.027977	9.972023	15	37
24	21	9.541272	10.458728	9.569261	10.430739	10.027989	9.972011	39	36
25	15	9.541357	10.458643	9.569358	10.430642	10.028001	9.971999	45	35
26	30	9.541442	10.458558	9.569455	10.430545	10.028012	9.971988	30	34
27	45	9.541527	10.458473	9.569552	10.430448	10.028024	9.971976	15	33
28	22	9.541613	10.458387	9.569648	10.430352	10.028036	9.971964	38	32
29	15	9.541698	10.458302	9.569745	10.430255	10.028048	9.971952	45	31
30	30	9.541783	10.458217	9.569842	10.430158	10.028059	9.971941	30	30
31	45	9.541868	10.458132	9.569939	10.430061	10.028071	9.971929	15	29
32	23	9.541953	10.458047	9.570035	10.429965	10.028083	9.971917	37	28
33	15	9.542038	10.457962	9.570132	10.429868	10.028095	9.971905	45	27
34	30	9.542123	10.457877	9.570229	10.429771	10.028106	9.971894	30	26
35	45	9.542208	10.457792	9.570326	10.429674	10.028118	9.971882	15	25
36	24	9.542293	10.457707	9.570422	10.429578	10.028130	9.971870	36	24
37	15	9.542377	10.457623	9.570519	10.429481	10.028142	9.971858	45	23
38	30	9.542462	10.457538	9.570616	10.429384	10.028153	9.971847	30	22
39	45	9.542547	10.457453	9.570712	10.429288	10.028165	9.971835	15	21
40	25	9.542632	10.457368	9.570809	10.429191	10.028177	9.971823	35	20
41	15	9.542717	10.457283	9.570905	10.429095	10.028189	9.971811	45	19
42	30	9.542802	10.457198	9.571002	10.428998	10.028200	9.971800	30	18
43	45	9.542887	10.457113	9.571099	10.428901	10.028212	9.971788	15	17
44	26	9.542971	10.457029	9.571195	10.428805	10.028224	9.971776	34	16
45	15	9.543056	10.456944	9.571292	10.428708	10.028236	9.971764	45	15
46	30	9.543141	10.456859	9.571388	10.428612	10.028247	9.971753	30	14
47	45	9.543226	10.456774	9.571485	10.428515	10.028259	9.971741	15	13
48	27	9.543310	10.456690	9.571581	10.428419	10.028271	9.971729	33	12
49	15	9.543395	10.456605	9.571678	10.428322	10.028283	9.971717	45	11
50	30	9.543480	10.456520	9.571774	10.428226	10.028294	9.971706	30	10
51	45	9.543564	10.456436	9.571870	10.428130	10.028306	9.971694	15	9
52	28	9.543649	10.456351	9.571967	10.428033	10.028318	9.971682	32	8
53	15	9.543733	10.456267	9.572063	10.427937	10.028330	9.971670	45	7
54	30	9.543818	10.456182	9.572160	10.427840	10.028342	9.971658	30	6
55	45	9.543903	10.456097	9.572256	10.427744	10.028353	9.971647	15	5
56	29	9.543987	10.456013	9.572352	10.427648	10.028365	9.971635	31	4
57	15	9.544072	10.455928	9.572449	10.427551	10.028377	9.971623	45	3
58	30	9.544156	10.455844	9.572545	10.427455	10.028389	9.971611	30	2
59	45	9.544241	10.455759	9.572641	10.427359	10.028401	9.971599	15	1
60	30	9.544325	10.455675	9.572738	10.427262	10.028412	9.971588	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 38 ^m .		LOG. SINES, &c.						69 deg.	

1 ^h 22 ^m .		LOG. SINES, &c. (t.)						20 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	9.544325	10.455675	9.572738	10.427262	10.028412	9.971588	30	60
1	15	9.544410	10.455590	9.572834	10.427166	10.028424	9.971576	45	59
2	30	9.544494	10.455506	9.572930	10.427070	10.028436	9.971564	30	58
3	45	9.544579	10.455421	9.573026	10.426974	10.028448	9.971552	15	57
4	31	9.544663	10.455337	9.573123	10.426877	10.028460	9.971540	29	56
5	15	9.544747	10.455253	9.573219	10.426781	10.028471	9.971529	45	55
6	30	9.544832	10.455168	9.573315	10.426685	10.028483	9.971517	30	54
7	45	9.544916	10.455084	9.573411	10.426589	10.028495	9.971505	15	53
8	32	9.545000	10.455000	9.573507	10.426493	10.028507	9.971493	28	52
9	15	9.545085	10.454915	9.573603	10.426397	10.028519	9.971481	45	51
10	30	9.545169	10.454831	9.573700	10.426300	10.028531	9.971469	30	50
11	45	9.545253	10.454747	9.573796	10.426204	10.028542	9.971458	15	49
12	33	9.545338	10.454662	9.573892	10.426108	10.028554	9.971446	27	48
13	15	9.545422	10.454578	9.573988	10.426012	10.028566	9.971434	45	47
14	30	9.545506	10.454494	9.574084	10.425916	10.028578	9.971422	30	46
15	45	9.545590	10.454410	9.574180	10.425820	10.028590	9.971410	15	45
16	34	9.545674	10.454326	9.574276	10.425724	10.028602	9.971398	26	44
17	15	9.545759	10.454241	9.574372	10.425628	10.028614	9.971386	45	43
18	30	9.545843	10.454157	9.574468	10.425532	10.028625	9.971375	30	42
19	45	9.545927	10.454073	9.574564	10.425436	10.028637	9.971363	15	41
20	35	9.546011	10.453989	9.574660	10.425340	10.028649	9.971351	25	40
21	15	9.546095	10.453905	9.574756	10.425244	10.028661	9.971339	45	39
22	30	9.546179	10.453821	9.574852	10.425148	10.028673	9.971327	30	38
23	45	9.546263	10.453737	9.574948	10.425052	10.028685	9.971315	15	37
24	36	9.546347	10.453653	9.575044	10.424956	10.028697	9.971303	24	36
25	15	9.546431	10.453569	9.575140	10.424860	10.028708	9.971292	45	35
26	30	9.546515	10.453485	9.575235	10.424765	10.028720	9.971280	30	34
27	45	9.546599	10.453401	9.575331	10.424669	10.028732	9.971268	15	33
28	37	9.546683	10.453317	9.575427	10.424573	10.028744	9.971256	23	32
29	15	9.546767	10.453233	9.575523	10.424477	10.028756	9.971244	45	31
30	30	9.546851	10.453149	9.575619	10.424381	10.028768	9.971232	30	30
31	45	9.546935	10.453065	9.575715	10.424285	10.028780	9.971220	15	29
32	38	9.547019	10.452981	9.575810	10.424190	10.028792	9.971208	22	28
33	15	9.547103	10.452897	9.575906	10.424094	10.028804	9.971196	45	27
34	30	9.547187	10.452813	9.576002	10.423998	10.028815	9.971185	30	26
35	45	9.547270	10.452730	9.576098	10.423902	10.028827	9.971173	15	25
36	39	9.547354	10.452646	9.576193	10.423807	10.028839	9.971161	21	24
37	15	9.547438	10.452562	9.576289	10.423711	10.028851	9.971149	45	23
38	30	9.547522	10.452478	9.576385	10.423615	10.028863	9.971137	30	22
39	45	9.547605	10.452395	9.576480	10.423520	10.028875	9.971125	15	21
40	40	9.547689	10.452311	9.576576	10.423424	10.028887	9.971113	20	20
41	15	9.547773	10.452227	9.576672	10.423328	10.028899	9.971101	45	19
42	30	9.547857	10.452143	9.576767	10.423233	10.028911	9.971089	30	18
43	45	9.547940	10.452060	9.576863	10.423137	10.028923	9.971077	15	17
44	41	9.548024	10.451976	9.576958	10.423042	10.028935	9.971065	19	16
45	15	9.548108	10.451892	9.577054	10.422946	10.028946	9.971054	45	15
46	30	9.548191	10.451809	9.577150	10.422850	10.028958	9.971042	30	14
47	45	9.548275	10.451725	9.577245	10.422755	10.028970	9.971030	15	13
48	42	9.548358	10.451642	9.577341	10.422659	10.028982	9.971018	18	12
49	15	9.548442	10.451558	9.577436	10.422564	10.028994	9.971006	45	11
50	30	9.548526	10.451474	9.577532	10.422468	10.029006	9.970994	30	10
51	45	9.548609	10.451391	9.577627	10.422373	10.029018	9.970982	15	9
52	43	9.548693	10.451307	9.577723	10.422277	10.029030	9.970970	17	8
53	15	9.548776	10.451224	9.577818	10.422182	10.029042	9.970958	45	7
54	30	9.548860	10.451140	9.577913	10.422087	10.029054	9.970946	30	6
55	45	9.548943	10.451057	9.578009	10.421991	10.029066	9.970934	15	5
56	44	9.549027	10.450973	9.578104	10.421896	10.029078	9.970922	16	4
57	15	9.549110	10.450890	9.578200	10.421800	10.029090	9.970910	45	3
58	30	9.549193	10.450807	9.578295	10.421705	10.029102	9.970898	30	2
59	45	9.549277	10.450723	9.578390	10.421610	10.029114	9.970886	15	1
60	45	9.549360	10.450640	9.578486	10.421514	10.029126	9.970874	15	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 37 ^m .		LOG. SINES, &c.						69 deg.	

1 ^h 23 ^m .		LOG. SINES, &c. (1.)						20 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.549360	10.450640	9.578486	10.421514	10.029126	9.970874	15	60
1	15	9.549443	10.450557	9.578581	10.421419	10.029138	9.970862	45	59
2	30	9.549527	10.450473	9.578676	10.421324	10.029150	9.970850	30	58
3	45	9.549610	10.450390	9.578772	10.421228	10.029162	9.970838	15	57
4	46	9.549693	10.450307	9.578867	10.421133	10.029174	9.970826	14	56
5	15	9.549777	10.450223	9.578962	10.421038	10.029186	9.970814	45	55
6	30	9.549860	10.450140	9.579057	10.420943	10.029197	9.970803	30	54
7	45	9.549943	10.450057	9.579153	10.420847	10.029209	9.970791	15	53
8	47	9.550026	10.449974	9.579248	10.420752	10.029221	9.970779	13	52
9	15	9.550110	10.449890	9.579343	10.420657	10.029233	9.970767	45	51
10	30	9.550193	10.449807	9.579438	10.420562	10.029245	9.970755	30	50
11	45	9.550276	10.449724	9.579533	10.420467	10.029257	9.970743	15	49
12	48	9.550359	10.449641	9.579629	10.420371	10.029269	9.970731	12	48
13	15	9.550442	10.449558	9.579724	10.420276	10.029281	9.970719	45	47
14	30	9.550525	10.449475	9.579819	10.420181	10.029293	9.970707	30	46
15	45	9.550608	10.449392	9.579914	10.420086	10.029305	9.970695	15	45
16	49	9.550692	10.449308	9.580009	10.419991	10.029317	9.970683	11	44
17	15	9.550775	10.449225	9.580104	10.419896	10.029329	9.970671	45	43
18	30	9.550858	10.449142	9.580199	10.419801	10.029341	9.970659	30	42
19	45	9.550941	10.449059	9.580294	10.419706	10.029353	9.970647	15	41
20	50	9.551024	10.448976	9.580389	10.419611	10.029365	9.970635	10	40
21	15	9.551107	10.448893	9.580484	10.419516	10.029377	9.970623	45	39
22	30	9.551190	10.448810	9.580579	10.419421	10.029389	9.970610	30	38
23	45	9.551273	10.448727	9.580674	10.419326	10.029402	9.970598	15	37
24	51	9.551356	10.448644	9.580769	10.419231	10.029414	9.970586	9	36
25	15	9.551438	10.448562	9.580864	10.419136	10.029426	9.970574	45	35
26	30	9.551521	10.448479	9.580959	10.419041	10.029438	9.970562	30	34
27	45	9.551604	10.448396	9.581054	10.418946	10.029450	9.970550	15	33
28	52	9.551687	10.448313	9.581149	10.418851	10.029462	9.970538	8	32
29	15	9.551770	10.448230	9.581244	10.418756	10.029474	9.970526	45	31
30	30	9.551853	10.448147	9.581338	10.418662	10.029486	9.970514	30	30
31	45	9.551936	10.448064	9.581433	10.418567	10.029498	9.970502	15	29
32	53	9.552018	10.447982	9.581528	10.418472	10.029510	9.970490	7	28
33	15	9.552101	10.447899	9.581623	10.418377	10.029522	9.970478	45	27
34	30	9.552184	10.447816	9.581718	10.418282	10.029534	9.970466	30	26
35	45	9.552267	10.447733	9.581813	10.418187	10.029546	9.970454	15	25
36	54	9.552349	10.447651	9.581907	10.418093	10.029558	9.970442	6	24
37	15	9.552432	10.447568	9.582002	10.417998	10.029570	9.970430	45	23
38	30	9.552515	10.447485	9.582097	10.417903	10.029582	9.970418	30	22
39	45	9.552597	10.447403	9.582192	10.417808	10.029594	9.970406	15	21
40	55	9.552680	10.447320	9.582286	10.417714	10.029606	9.970394	5	20
41	15	9.552763	10.447237	9.582381	10.417619	10.029618	9.970382	45	19
42	30	9.552845	10.447155	9.582476	10.417524	10.029631	9.970369	30	18
43	45	9.552928	10.447072	9.582570	10.417430	10.029643	9.970357	15	17
44	56	9.553010	10.446990	9.582665	10.417335	10.029655	9.970345	4	16
45	15	9.553093	10.446907	9.582760	10.417240	10.029667	9.970333	45	15
46	30	9.553175	10.446825	9.582854	10.417146	10.029679	9.970321	30	14
47	45	9.553258	10.446742	9.582949	10.417051	10.029691	9.970309	15	13
48	57	9.553341	10.446659	9.583043	10.416957	10.029703	9.970297	3	12
49	15	9.553423	10.446577	9.583138	10.416862	10.029715	9.970285	45	11
50	30	9.553505	10.446495	9.583233	10.416767	10.029727	9.970273	30	10
51	45	9.553588	10.446412	9.583327	10.416673	10.029739	9.970261	15	9
52	58	9.553670	10.446330	9.583422	10.416578	10.029751	9.970249	2	8
53	15	9.553753	10.446247	9.583516	10.416484	10.029764	9.970236	45	7
54	30	9.553835	10.446165	9.583611	10.416390	10.029776	9.970224	30	6
55	45	9.553918	10.446082	9.583705	10.416295	10.029788	9.970212	15	5
56	59	9.554000	10.446000	9.583800	10.416200	10.029800	9.970200	1	4
57	15	9.554082	10.445918	9.583894	10.416106	10.029812	9.970188	45	3
58	30	9.554165	10.445835	9.583989	10.416011	10.029824	9.970176	30	2
59	45	9.554247	10.445753	9.584083	10.415917	10.029836	9.970164	15	1
60	60	9.554329	10.445671	9.584177	10.415823	10.029848	9.970152	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 36 ^m .		LOG. SINES, &c.						69 deg.	

1° 24'.		LOG. SINES, &c. (L.)						21 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	sec.	"
0	0	9.554329	10.445671	9.584177	10.415823	10.029848	9.970152	60	60
1	15	9.554411	10.445589	9.584272	10.415728	10.029860	9.970140	45	59
2	30	9.554494	10.445506	9.584366	10.415634	10.029873	9.970127	30	58
3	45	9.554576	10.445424	9.584461	10.415539	10.029885	9.970115	15	57
4	1	9.554658	10.445342	9.584555	10.415445	10.029897	9.970103	59	56
5	15	9.554740	10.445260	9.584649	10.415351	10.029909	9.970091	45	55
6	30	9.554822	10.445178	9.584743	10.415257	10.029921	9.970079	30	54
7	45	9.554905	10.445095	9.584838	10.415162	10.029933	9.970067	15	53
8	2	9.554987	10.445013	9.584932	10.415068	10.029945	9.970055	58	52
9	15	9.555069	10.444931	9.585026	10.414974	10.029958	9.970042	45	51
10	30	9.555151	10.444849	9.585121	10.414879	10.029970	9.970030	30	50
11	45	9.555233	10.444767	9.585215	10.414785	10.029982	9.970018	15	49
12	3	9.555315	10.444685	9.585309	10.414691	10.029994	9.970006	57	48
13	15	9.555397	10.444603	9.585403	10.414597	10.030006	9.969994	45	47
14	30	9.555479	10.444521	9.585497	10.414503	10.030018	9.969982	30	46
15	45	9.555561	10.444439	9.585592	10.414408	10.030030	9.969970	15	45
16	4	9.555643	10.444357	9.585686	10.414314	10.030043	9.969957	56	44
17	15	9.555725	10.444275	9.585780	10.414220	10.030055	9.969945	45	43
18	30	9.555807	10.444193	9.585874	10.414126	10.030067	9.969933	30	42
19	45	9.555889	10.444111	9.585968	10.414032	10.030079	9.969921	15	41
20	5	9.555971	10.444029	9.586062	10.413938	10.030091	9.969909	55	40
21	15	9.556053	10.443947	9.586156	10.413844	10.030103	9.969897	45	39
22	30	9.556135	10.443865	9.586250	10.413750	10.030116	9.969884	30	38
23	45	9.556217	10.443783	9.586345	10.413655	10.030128	9.969872	15	37
24	6	9.556299	10.443701	9.586439	10.413561	10.030140	9.969860	54	36
25	15	9.556380	10.443620	9.586533	10.413467	10.030152	9.969848	45	35
26	30	9.556462	10.443538	9.586627	10.413373	10.030164	9.969836	30	34
27	45	9.556544	10.443456	9.586721	10.413279	10.030177	9.969823	15	33
28	7	9.556626	10.443374	9.586815	10.413185	10.030189	9.969811	53	32
29	15	9.556708	10.443292	9.586909	10.413091	10.030201	9.969799	45	31
30	30	9.556789	10.443211	9.587003	10.412997	10.030213	9.969787	30	30
31	45	9.556871	10.443129	9.587096	10.412904	10.030225	9.969775	15	29
32	8	9.556953	10.443047	9.587190	10.412810	10.030238	9.969762	52	28
33	15	9.557035	10.442965	9.587284	10.412716	10.030250	9.969750	45	27
34	30	9.557116	10.442884	9.587378	10.412622	10.030262	9.969738	30	26
35	45	9.557198	10.442802	9.587472	10.412528	10.030274	9.969726	15	25
36	9	9.557280	10.442720	9.587566	10.412434	10.030286	9.969714	51	24
37	15	9.557361	10.442639	9.587660	10.412340	10.030299	9.969701	45	23
38	30	9.557443	10.442557	9.587754	10.412246	10.030311	9.969689	30	22
39	45	9.557524	10.442476	9.587847	10.412153	10.030323	9.969677	15	21
40	10	9.557606	10.442394	9.587941	10.412059	10.030335	9.969665	50	20
41	15	9.557687	10.442313	9.588035	10.411965	10.030348	9.969652	45	19
42	30	9.557769	10.442231	9.588129	10.411871	10.030360	9.969640	30	18
43	45	9.557851	10.442149	9.588223	10.411777	10.030372	9.969628	15	17
44	11	9.557932	10.442068	9.588316	10.411684	10.030384	9.969616	49	16
45	15	9.558014	10.441986	9.588410	10.411590	10.030397	9.969603	45	15
46	30	9.558095	10.441905	9.588504	10.411496	10.030409	9.969591	30	14
47	45	9.558176	10.441824	9.588597	10.411403	10.030421	9.969579	15	13
48	12	9.558258	10.441742	9.588691	10.411309	10.030433	9.969567	48	12
49	15	9.558339	10.441661	9.588785	10.411215	10.030446	9.969554	45	11
50	30	9.558421	10.441579	9.588878	10.411122	10.030458	9.969542	30	10
51	45	9.558502	10.441498	9.588972	10.411028	10.030470	9.969530	15	9
52	13	9.558583	10.441417	9.589066	10.410934	10.030482	9.969518	47	8
53	15	9.558665	10.441335	9.589159	10.410841	10.030495	9.969505	45	7
54	30	9.558746	10.441254	9.589253	10.410747	10.030507	9.969493	30	6
55	45	9.558827	10.441173	9.589346	10.410654	10.030519	9.969481	15	5
56	14	9.558909	10.441091	9.589440	10.410560	10.030531	9.969469	46	4
57	15	9.558990	10.441010	9.589534	10.410466	10.030544	9.969456	45	3
58	30	9.559071	10.440929	9.589627	10.410373	10.030556	9.969443	30	2
59	45	9.559152	10.440848	9.589721	10.410279	10.030568	9.969432	15	1
60	15	9.559234	10.440766	9.589814	10.410186	10.030580	9.969420	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4° 35'.		LOG. SINES, &c.						68 deg.	

1 ^h 25 ^m .			LOG. SINES, &c. (L.)					21 deg.		
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"	sec.
0	15	9.559234	10.440766	9.589814	10.410186	10.030580	9.969420	45		60
1	15	9.559315	10.440685	9.589908	10.410092	10.030593	9.969407	45		59
2	30	9.559396	10.440604	9.590001	10.409999	10.030605	9.969395	30		58
3	45	9.559477	10.440523	9.590095	10.409905	10.030617	9.969383	15		57
4	16	9.559558	10.440442	9.590188	10.409812	10.030630	9.969370	44		56
5	15	9.559640	10.440360	9.590281	10.409719	10.030642	9.969358	45		55
6	30	9.559721	10.440279	9.590375	10.409625	10.030654	9.969346	30		54
7	45	9.559802	10.440198	9.590468	10.409532	10.030667	9.969333	15		53
8	17	9.559883	10.440117	9.590562	10.409438	10.030679	9.969321	43		52
9	15	9.559964	10.440036	9.590655	10.409345	10.030691	9.969309	45		51
10	30	9.560045	10.439955	9.590748	10.409252	10.030703	9.969297	30		50
11	45	9.560126	10.439874	9.590842	10.409158	10.030716	9.969284	15		49
12	18	9.560207	10.439793	9.590935	10.409065	10.030728	9.969272	42		48
13	15	9.560288	10.439712	9.591028	10.408972	10.030740	9.969260	45		47
14	30	9.560369	10.439631	9.591122	10.408878	10.030753	9.969247	30		46
15	45	9.560450	10.439550	9.591215	10.408785	10.030765	9.969235	15		45
16	19	9.560531	10.439469	9.591308	10.408692	10.030777	9.969223	41		44
17	15	9.560612	10.439388	9.591401	10.408599	10.030790	9.969210	45		43
18	30	9.560693	10.439307	9.591495	10.408505	10.030802	9.969198	30		42
19	45	9.560774	10.439226	9.591588	10.408412	10.030814	9.969186	15		41
20	20	9.560855	10.439145	9.591681	10.408319	10.030827	9.969173	40		40
21	15	9.560935	10.439065	9.591774	10.408226	10.030839	9.969161	45		39
22	30	9.561016	10.438984	9.591867	10.408133	10.030851	9.969149	30		38
23	45	9.561097	10.438903	9.591961	10.408039	10.030864	9.969136	15		37
24	21	9.561178	10.438822	9.592054	10.407946	10.030876	9.969124	39		36
25	15	9.561259	10.438741	9.592147	10.407853	10.030888	9.969112	45		35
26	30	9.561339	10.438661	9.592240	10.407760	10.030901	9.969099	30		34
27	45	9.561420	10.438580	9.592333	10.407667	10.030913	9.969087	15		33
28	22	9.561501	10.438499	9.592426	10.407574	10.030925	9.969075	38		32
29	15	9.561582	10.438418	9.592519	10.407481	10.030938	9.969062	45		31
30	30	9.561662	10.438338	9.592612	10.407388	10.030950	9.969050	30		30
31	45	9.561743	10.438257	9.592705	10.407295	10.030962	9.969038	15		29
32	23	9.561824	10.438176	9.592798	10.407202	10.030975	9.969025	37		28
33	15	9.561904	10.438096	9.592891	10.407109	10.030987	9.969013	45		27
34	30	9.561985	10.438015	9.592985	10.407015	10.031000	9.969000	30		26
35	45	9.562066	10.437934	9.593077	10.406923	10.031012	9.968988	15		25
36	24	9.562146	10.437854	9.593170	10.406830	10.031024	9.968976	36		24
37	15	9.562227	10.437773	9.593263	10.406737	10.031037	9.968963	45		23
38	30	9.562307	10.437693	9.593356	10.406644	10.031049	9.968951	30		22
39	45	9.562388	10.437612	9.593449	10.406551	10.031061	9.968939	15		21
40	25	9.562468	10.437532	9.593542	10.406458	10.031074	9.968926	35		20
41	15	9.562549	10.437451	9.593635	10.406365	10.031086	9.968914	45		19
42	30	9.562629	10.437371	9.593728	10.406272	10.031099	9.968901	30		18
43	45	9.562710	10.437290	9.593821	10.406179	10.031111	9.968889	15		17
44	26	9.562790	10.437210	9.593914	10.406086	10.031123	9.968877	34		16
45	15	9.562871	10.437129	9.594007	10.405993	10.031136	9.968864	45		15
46	30	9.562951	10.437049	9.594099	10.405901	10.031148	9.968852	30		14
47	45	9.563032	10.436968	9.594192	10.405808	10.031161	9.968839	15		13
48	27	9.563112	10.436888	9.594285	10.405715	10.031173	9.968827	33		12
49	15	9.563192	10.436808	9.594378	10.405622	10.031185	9.968815	45		11
50	30	9.563273	10.436727	9.594471	10.405529	10.031198	9.968802	30		10
51	45	9.563353	10.436647	9.594563	10.405437	10.031210	9.968790	15		9
52	28	9.563433	10.436567	9.594656	10.405344	10.031223	9.968777	32		8
53	15	9.563514	10.436486	9.594749	10.405251	10.031235	9.968765	45		7
54	30	9.563594	10.436406	9.594842	10.405158	10.031248	9.968752	30		6
55	45	9.563674	10.436326	9.594934	10.405066	10.031260	9.968740	15		5
56	29	9.563755	10.436245	9.595027	10.404973	10.031272	9.968728	31		4
57	15	9.563835	10.436165	9.595120	10.404880	10.031285	9.968715	45		3
58	30	9.563915	10.436085	9.595212	10.404788	10.031297	9.968703	30		2
59	45	9.563995	10.436005	9.595305	10.404695	10.031310	9.968690	15		1
60	30	9.564075	10.435925	9.595397	10.404603	10.031322	9.968678	30		0
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	sine.	"	"	sec.
4 ^h 34 ^m .			LOG. SINES, &c.					68 deg.		

1 ^h 26 ^m .		LOG. SINES, &c. (L.)						21 deg.		
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	co-ine.	"	"	sec.
0	30	9.564075	10.435925	9.595397	10.404603	10.031322	9.968678	30		60
1	15	9.564156	10.435844	9.595490	10.404510	10.031335	9.968665	45		59
2	30	9.564236	10.435764	9.595583	10.404417	10.031347	9.968653	30		58
3	45	9.564316	10.435684	9.595675	10.404325	10.031359	9.968641	15		57
4	31	9.564396	10.435604	9.595768	10.404232	10.031372	9.968628	29		56
5	15	9.564476	10.435524	9.595860	10.404140	10.031384	9.968616	45		55
6	30	9.564556	10.435444	9.595953	10.404047	10.031397	9.968603	30		54
7	45	9.564636	10.435364	9.596045	10.403955	10.031409	9.968591	15		53
8	32	9.564716	10.435284	9.596138	10.403862	10.031422	9.968578	28		52
9	15	9.564796	10.435204	9.596230	10.403770	10.031434	9.968566	45		51
10	30	9.564876	10.435124	9.596323	10.403677	10.031447	9.968553	30		50
11	45	9.564956	10.435044	9.596415	10.403585	10.031459	9.968541	15		49
12	33	9.565036	10.434964	9.596508	10.403492	10.031472	9.968528	27		48
13	15	9.565116	10.434884	9.596600	10.403400	10.031484	9.968516	45		47
14	30	9.565196	10.434804	9.596693	10.403307	10.031497	9.968503	30		46
15	45	9.565276	10.434724	9.596785	10.403215	10.031509	9.968491	15		45
16	34	9.565356	10.434644	9.596878	10.403122	10.031522	9.968478	26		44
17	15	9.565436	10.434564	9.596970	10.403030	10.031534	9.968466	45		43
18	30	9.565516	10.434484	9.597062	10.402938	10.031547	9.968453	30		42
19	45	9.565596	10.434404	9.597155	10.402845	10.031559	9.968441	15		41
20	35	9.565676	10.434324	9.597247	10.402753	10.031571	9.968429	25		40
21	15	9.565756	10.434245	9.597339	10.402661	10.031584	9.968416	45		39
22	30	9.565836	10.434165	9.597432	10.402568	10.031596	9.968404	30		38
23	45	9.565916	10.434085	9.597524	10.402476	10.031609	9.968391	15		37
24	36	9.565996	10.434005	9.597616	10.402384	10.031621	9.968379	24		36
25	15	9.566076	10.433926	9.597708	10.402292	10.031634	9.968366	45		35
26	30	9.566156	10.433846	9.597801	10.402199	10.031647	9.968353	30		34
27	45	9.566236	10.433766	9.597893	10.402107	10.031659	9.968341	15		33
28	37	9.566316	10.433686	9.597985	10.402015	10.031672	9.968328	23		32
29	15	9.566396	10.433607	9.598077	10.401923	10.031684	9.968316	45		31
30	30	9.566476	10.433527	9.598170	10.401830	10.031697	9.968303	30		30
31	45	9.566556	10.433447	9.598262	10.401738	10.031709	9.968291	15		29
32	38	9.566636	10.433368	9.598354	10.401646	10.031722	9.968278	22		28
33	15	9.566716	10.433288	9.598446	10.401554	10.031734	9.968266	45		27
34	30	9.566796	10.433208	9.598538	10.401462	10.031747	9.968253	30		26
35	45	9.566876	10.433129	9.598630	10.401370	10.031759	9.968241	15		25
36	39	9.566956	10.433049	9.598722	10.401278	10.031772	9.968228	21		24
37	15	9.567036	10.432970	9.598815	10.401185	10.031784	9.968216	45		23
38	30	9.567116	10.432890	9.598907	10.401093	10.031797	9.968203	30		22
39	45	9.567196	10.432811	9.598999	10.401001	10.031809	9.968191	15		21
40	40	9.567269	10.432731	9.599091	10.400909	10.031822	9.968178	20		20
41	15	9.567348	10.432652	9.599183	10.400817	10.031834	9.968166	45		19
42	30	9.567428	10.432572	9.599275	10.400725	10.031847	9.968153	30		18
43	45	9.567507	10.432493	9.599367	10.400633	10.031860	9.968140	15		17
44	41	9.567587	10.432413	9.599459	10.400541	10.031872	9.968128	19		16
45	15	9.567666	10.432334	9.599551	10.400449	10.031885	9.968115	45		15
46	30	9.567746	10.432254	9.599643	10.400357	10.031897	9.968103	30		14
47	46	9.567825	10.432175	9.599735	10.400265	10.031910	9.968090	15		13
48	42	9.567904	10.432096	9.599827	10.400173	10.031922	9.968078	18		12
49	15	9.567984	10.432016	9.599919	10.400081	10.031935	9.968065	45		11
50	30	9.568063	10.431937	9.600010	10.399990	10.031948	9.968052	30		10
51	45	9.568143	10.431858	9.600102	10.399898	10.031960	9.968040	15		9
52	43	9.568222	10.431778	9.600194	10.399806	10.031973	9.968027	17		8
53	15	9.568301	10.431699	9.600286	10.399714	10.031985	9.968015	45		7
54	30	9.568380	10.431620	9.600378	10.399622	10.031998	9.968002	30		6
55	45	9.568459	10.431541	9.600470	10.399530	10.032010	9.967990	15		5
56	44	9.568539	10.431461	9.600562	10.399438	10.032023	9.967977	16		4
57	15	9.568618	10.431382	9.600653	10.399347	10.032036	9.967964	45		3
58	30	9.568697	10.431303	9.600745	10.399255	10.032048	9.967952	30		2
59	45	9.568776	10.431224	9.600837	10.399163	10.032061	9.967939	15		1
60	45	9.568855	10.431145	9.600929	10.399071	10.032073	9.967927	15		0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"	sec.
4 ^h 33 ^m .		LOG. SINES, &c.						68 deg.		

1 ^h 27 ^m .		LOG. SINES, &c. (t.)						21 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine	"	sec.
0	45	9.568855	10.431145	9.600929	10.399071	10.032073	9.967927	15	60
1	15	9.568985	10.431065	9.601021	10.398979	10.032086	9.967914	45	59
2	30	9.569014	10.430986	9.601112	10.398888	10.032099	9.967901	30	58
3	45	9.569093	10.430907	9.601204	10.398796	10.032111	9.967889	15	57
4	46	9.569172	10.430828	9.601296	10.398704	10.032124	9.967876	14	56
5	15	9.569251	10.430749	9.601387	10.398613	10.032136	9.967864	45	55
6	30	9.569330	10.430670	9.601479	10.398521	10.032149	9.967851	30	54
7	45	9.569409	10.430591	9.601571	10.398429	10.032162	9.967838	15	53
8	47	9.569488	10.430512	9.601662	10.398338	10.032174	9.967826	13	52
9	15	9.569567	10.430433	9.601754	10.398246	10.032187	9.967813	45	51
10	30	9.569646	10.430354	9.601846	10.398154	10.032200	9.967800	30	50
11	45	9.569725	10.430275	9.601937	10.398063	10.032212	9.967788	15	49
12	48	9.569804	10.430196	9.602029	10.397971	10.032225	9.967775	12	48
13	15	9.569883	10.430117	9.602121	10.397879	10.032237	9.967763	45	47
14	30	9.569962	10.430038	9.602212	10.397788	10.032250	9.967750	30	46
15	45	9.570041	10.429959	9.602304	10.397696	10.032263	9.967737	15	45
16	49	9.570120	10.429880	9.602395	10.397605	10.032275	9.967725	11	44
17	15	9.570199	10.429801	9.602487	10.397513	10.032288	9.967712	45	43
18	30	9.570278	10.429722	9.602578	10.397422	10.032301	9.967699	30	42
19	45	9.570357	10.429643	9.602670	10.397330	10.032313	9.967687	15	41
20	50	9.570435	10.429565	9.602761	10.397239	10.032326	9.967674	10	40
21	15	9.570514	10.429486	9.602853	10.397147	10.032339	9.967661	45	39
22	30	9.570593	10.429407	9.602944	10.397056	10.032351	9.967649	30	38
23	45	9.570672	10.429328	9.603036	10.396964	10.032364	9.967636	15	37
24	51	9.570751	10.429249	9.603127	10.396873	10.032377	9.967623	9	36
25	15	9.570829	10.429171	9.603219	10.396781	10.032389	9.967611	45	35
26	30	9.570908	10.429092	9.603310	10.396690	10.032402	9.967598	30	34
27	45	9.570987	10.429013	9.603401	10.396599	10.032415	9.967585	15	33
28	52	9.571066	10.428934	9.603493	10.396507	10.032427	9.967573	8	32
29	15	9.571144	10.428856	9.603584	10.396416	10.032440	9.967560	45	31
30	30	9.571223	10.428777	9.603675	10.396325	10.032453	9.967547	30	30
31	45	9.571302	10.428698	9.603767	10.396233	10.032465	9.967535	15	29
32	53	9.571380	10.428620	9.603858	10.396142	10.032478	9.967522	7	28
33	15	9.571459	10.428541	9.603949	10.396051	10.032491	9.967509	45	27
34	30	9.571537	10.428463	9.604041	10.395959	10.032503	9.967497	30	26
35	45	9.571616	10.428384	9.604132	10.395868	10.032516	9.967484	15	25
36	54	9.571695	10.428305	9.604223	10.395777	10.032529	9.967471	6	24
37	15	9.571773	10.428227	9.604314	10.395686	10.032541	9.967459	45	23
38	30	9.571852	10.428148	9.604406	10.395594	10.032554	9.967446	30	22
39	45	9.571930	10.428070	9.604497	10.395503	10.032567	9.967433	15	21
40	55	9.572009	10.427991	9.604588	10.395412	10.032580	9.967420	5	20
41	15	9.572087	10.427913	9.604679	10.395321	10.032592	9.967408	45	19
42	30	9.572166	10.427834	9.604771	10.395229	10.032605	9.967395	30	18
43	45	9.572244	10.427756	9.604862	10.395138	10.032618	9.967382	15	17
44	56	9.572323	10.427677	9.604953	10.395047	10.032630	9.967370	4	16
45	15	9.572401	10.427599	9.605044	10.394956	10.032643	9.967357	45	15
46	30	9.572479	10.427521	9.605135	10.394865	10.032656	9.967344	30	14
47	45	9.572558	10.427442	9.605226	10.394774	10.032669	9.967331	15	13
48	57	9.572636	10.427364	9.605317	10.394683	10.032681	9.967319	3	12
49	15	9.572715	10.427285	9.605408	10.394592	10.032694	9.967306	45	11
50	30	9.572793	10.427207	9.605500	10.394500	10.032707	9.967293	30	10
51	45	9.572871	10.427129	9.605591	10.394409	10.032719	9.967281	15	9
52	58	9.572949	10.427051	9.605682	10.394318	10.032732	9.967268	2	8
53	15	9.573028	10.426972	9.605773	10.394227	10.032745	9.967255	45	7
54	30	9.573106	10.426894	9.605864	10.394136	10.032758	9.967242	30	6
55	45	9.573184	10.426816	9.605955	10.394045	10.032770	9.967230	15	5
56	59	9.573263	10.426737	9.606046	10.393954	10.032783	9.967217	1	4
57	15	9.573341	10.426659	9.606137	10.393863	10.032796	9.967204	45	3
58	30	9.573419	10.426581	9.606228	10.393772	10.032809	9.967191	30	2
59	45	9.573497	10.426503	9.606319	10.393681	10.032821	9.967179	15	1
60	60	9.573575	10.426425	9.606410	10.393590	10.032834	9.967166	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 32 ^m .		LOG. SINES, &c.						68 deg.	

1 ^h 28 ^m		LOG. SINES, &c. (t.)						22 deg.		
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	'	sec.
0	0	9.573575	10.426425	9.606410	10.393590	10.032834	9.967166	60		60
1	15	9.573654	10.426346	9.606500	10.393500	10.032847	9.967153	45		59
2	30	9.573732	10.426268	9.606591	10.393409	10.032860	9.967140	30		58
3	45	9.573810	10.426190	9.606682	10.393318	10.032872	9.967128	15		57
4	1	9.573888	10.426112	9.606773	10.393227	10.032885	9.967115	59		56
5	15	9.573966	10.426034	9.606864	10.393136	10.032898	9.967102	45		55
6	30	9.574044	10.425956	9.606955	10.393045	10.032911	9.967089	30		54
7	45	9.574122	10.425878	9.607046	10.392954	10.032924	9.967076	15		53
8	2	9.574200	10.425800	9.607137	10.392863	10.032936	9.967064	58		52
9	15	9.574278	10.425722	9.607227	10.392773	10.032949	9.967051	45		51
10	30	9.574356	10.425644	9.607318	10.392682	10.032962	9.967038	30		50
11	45	9.574434	10.425566	9.607409	10.392591	10.032975	9.967025	15		49
12	3	9.574512	10.425488	9.607500	10.392500	10.032988	9.967012	57		48
13	15	9.574590	10.425410	9.607590	10.392410	10.033000	9.967000	45		47
14	30	9.574668	10.425332	9.607681	10.392319	10.033013	9.966987	30		46
15	45	9.574746	10.425254	9.607772	10.392228	10.033026	9.966974	15		45
16	4	9.574824	10.425176	9.607863	10.392137	10.033039	9.966961	56		44
17	15	9.574902	10.425098	9.607953	10.392047	10.033052	9.966948	45		43
18	30	9.574980	10.425020	9.608044	10.391956	10.033064	9.966936	30		42
19	45	9.575058	10.424942	9.608135	10.391865	10.033077	9.966923	15		41
20	5	9.575136	10.424864	9.608225	10.391775	10.033090	9.966910	55		40
21	15	9.575213	10.424787	9.608316	10.391684	10.033103	9.966897	45		39
22	30	9.575291	10.424709	9.608407	10.391593	10.033116	9.966884	30		38
23	45	9.575369	10.424631	9.608497	10.391503	10.033128	9.966872	15		37
24	6	9.575447	10.424553	9.608588	10.391412	10.033141	9.966859	54		36
25	15	9.575525	10.424475	9.608679	10.391321	10.033154	9.966846	45		35
26	30	9.575602	10.424398	9.608769	10.391231	10.033167	9.966833	30		34
27	45	9.575680	10.424320	9.608860	10.391140	10.033180	9.966820	15		33
28	7	9.575758	10.424242	9.608950	10.391050	10.033193	9.966807	53		32
29	15	9.575835	10.424165	9.609041	10.390959	10.033205	9.966795	45		31
30	30	9.575913	10.424087	9.609131	10.390869	10.033218	9.966782	30		30
31	45	9.575991	10.424009	9.609222	10.390778	10.033231	9.966769	15		29
32	8	9.576068	10.423932	9.609312	10.390688	10.033244	9.966756	52		28
33	15	9.576146	10.423854	9.609403	10.390597	10.033257	9.966743	45		27
34	30	9.576224	10.423776	9.609493	10.390507	10.033270	9.966730	30		26
35	45	9.576301	10.423699	9.609584	10.390416	10.033282	9.966718	15		25
36	9	9.576379	10.423621	9.609674	10.390326	10.033295	9.966705	51		24
37	15	9.576457	10.423543	9.609765	10.390235	10.033308	9.966692	45		23
38	30	9.576534	10.423466	9.609855	10.390145	10.033321	9.966679	30		22
39	45	9.576612	10.423388	9.609945	10.390055	10.033334	9.966666	15		21
40	10	9.576689	10.423311	9.610036	10.389964	10.033347	9.966653	50		20
41	15	9.576767	10.423233	9.610126	10.389874	10.033360	9.966640	45		19
42	30	9.576844	10.423156	9.610217	10.389783	10.033372	9.966628	30		18
43	45	9.576922	10.423078	9.610307	10.389693	10.033385	9.966615	15		17
44	11	9.576999	10.423001	9.610397	10.389603	10.033398	9.966602	49		16
45	15	9.577077	10.422923	9.610488	10.389512	10.033411	9.966589	45		15
46	30	9.577154	10.422846	9.610578	10.389422	10.033424	9.966576	30		14
47	45	9.577231	10.422769	9.610668	10.389332	10.033437	9.966563	15		13
48	12	9.577309	10.422691	9.610759	10.389241	10.033450	9.966550	48		12
49	15	9.577386	10.422614	9.610849	10.389151	10.033463	9.966537	45		11
50	30	9.577464	10.422536	9.610939	10.389061	10.033476	9.966524	30		10
51	45	9.577541	10.422459	9.611029	10.388971	10.033488	9.966512	15		9
52	13	9.577618	10.422382	9.611120	10.388880	10.033501	9.966499	47		8
53	15	9.577696	10.422304	9.611210	10.388790	10.033514	9.966486	45		7
54	30	9.577773	10.422227	9.611300	10.388700	10.033527	9.966473	30		6
55	45	9.577850	10.422150	9.611390	10.388610	10.033540	9.966460	15		5
56	14	9.577927	10.422073	9.611480	10.388520	10.033553	9.966447	46		4
57	15	9.578005	10.421995	9.611570	10.388430	10.033566	9.966434	45		3
58	30	9.578082	10.421918	9.611661	10.388339	10.033579	9.966421	30		2
59	45	9.578159	10.421841	9.611751	10.388249	10.033592	9.966408	15		1
60	15	9.578236	10.421764	9.611841	10.388159	10.033605	9.966395	45		0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	'	sec.
4 ^h 31 ^m		LOG. SINES, &c.						67 deg.		

1 ^h 29 ^m		LOG. SINES, &c. (t.)						22 deg.	
sec.	"	sine.	cosecant	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.578236	10.421764	9.611841	10.388159	10.033605	9.966395	45	60
1	15	9.578314	10.421066	9.611931	10.388069	10.033618	9.966382	45	59
2	30	9.578391	10.421609	9.612021	10.387979	10.033630	9.966370	30	58
3	45	9.578468	10.421532	9.612111	10.387889	10.033643	9.966357	15	57
4	16	9.578545	10.421455	9.612201	10.387799	10.033656	9.966344	44	56
5	15	9.578622	10.421378	9.612291	10.387709	10.033669	9.966331	45	55
6	30	9.578699	10.421301	9.612381	10.387619	10.033682	9.966318	30	54
7	45	9.578776	10.421224	9.612471	10.387529	10.033695	9.966305	15	53
8	17	9.578853	10.421147	9.612561	10.387439	10.033708	9.966292	43	52
9	15	9.578930	10.421070	9.612651	10.387349	10.033721	9.966279	45	51
10	30	9.579008	10.420992	9.612741	10.387259	10.033734	9.966266	30	50
11	45	9.579085	10.420915	9.612831	10.387169	10.033747	9.966253	15	49
12	18	9.579162	10.420838	9.612921	10.387079	10.033760	9.966240	42	48
13	15	9.579239	10.420761	9.613011	10.386989	10.033773	9.966227	45	47
14	30	9.579316	10.420684	9.613101	10.386899	10.033786	9.966214	30	46
15	45	9.579393	10.420607	9.613191	10.386809	10.033799	9.966201	15	45
16	19	9.579469	10.420531	9.613281	10.386719	10.033812	9.966188	41	44
17	15	9.579546	10.420454	9.613371	10.386629	10.033825	9.966175	45	43
18	30	9.579623	10.420377	9.613461	10.386539	10.033838	9.966162	30	42
19	45	9.579700	10.420300	9.613551	10.386449	10.033851	9.966149	15	41
20	20	9.579777	10.420223	9.613641	10.386359	10.033864	9.966136	40	40
21	15	9.579854	10.420146	9.613730	10.386270	10.033877	9.966123	45	39
22	30	9.579931	10.420069	9.613820	10.386180	10.033890	9.966110	30	38
23	45	9.580008	10.419992	9.613910	10.386090	10.033903	9.966097	15	37
24	21	9.580084	10.419916	9.614000	10.386000	10.033915	9.966085	39	36
25	15	9.580161	10.419839	9.614090	10.385910	10.033928	9.966072	45	35
26	30	9.580238	10.419762	9.614180	10.385820	10.033941	9.966059	30	34
27	45	9.580315	10.419685	9.614269	10.385731	10.033954	9.966046	15	33
28	22	9.580392	10.419608	9.614359	10.385641	10.033967	9.966033	38	32
29	15	9.580468	10.419532	9.614449	10.385551	10.033980	9.966020	45	31
30	30	9.580545	10.419455	9.614539	10.385461	10.033993	9.966007	30	30
31	45	9.580622	10.419378	9.614628	10.385372	10.034006	9.965994	15	29
32	23	9.580699	10.419301	9.614718	10.385282	10.034019	9.965981	37	28
33	15	9.580775	10.419225	9.614808	10.385192	10.034032	9.965968	45	27
34	30	9.580852	10.419148	9.614897	10.385103	10.034045	9.965955	30	26
35	45	9.580929	10.419071	9.614987	10.385013	10.034058	9.965942	15	25
36	24	9.581005	10.418995	9.615077	10.384923	10.034072	9.965928	36	24
37	15	9.581082	10.418918	9.615166	10.384834	10.034085	9.965915	45	23
38	30	9.581158	10.418842	9.615256	10.384744	10.034098	9.965902	30	22
39	45	9.581235	10.418765	9.615345	10.384655	10.034111	9.965889	15	21
40	25	9.581312	10.418688	9.615435	10.384565	10.034124	9.965876	35	20
41	15	9.581388	10.418612	9.615525	10.384475	10.034137	9.965863	45	19
42	30	9.581465	10.418535	9.615614	10.384386	10.034150	9.965850	30	18
43	45	9.581541	10.418459	9.615704	10.384296	10.034163	9.965837	15	17
44	26	9.581618	10.418382	9.615793	10.384207	10.034176	9.965824	34	16
45	15	9.581694	10.418306	9.615883	10.384117	10.034189	9.965811	45	15
46	30	9.581771	10.418229	9.615972	10.384028	10.034202	9.965798	30	14
47	45	9.581847	10.418153	9.616062	10.383938	10.034215	9.965785	15	13
48	27	9.581924	10.418076	9.616151	10.383849	10.034228	9.965772	33	12
49	15	9.582000	10.418000	9.616241	10.383759	10.034241	9.965759	45	11
50	30	9.582076	10.417924	9.616330	10.383670	10.034254	9.965746	30	10
51	45	9.582153	10.417847	9.616420	10.383580	10.034267	9.965733	15	9
52	28	9.582229	10.417771	9.616509	10.383491	10.034280	9.965720	32	8
53	15	9.582305	10.417695	9.616599	10.383401	10.034293	9.965707	45	7
54	30	9.582382	10.417618	9.616688	10.383312	10.034306	9.965694	30	6
55	45	9.582458	10.417542	9.616777	10.383223	10.034319	9.965681	15	5
56	29	9.582534	10.417466	9.616867	10.383133	10.034332	9.965668	31	4
57	15	9.582611	10.417389	9.616956	10.383044	10.034345	9.965655	45	3
58	30	9.582687	10.417313	9.617046	10.382954	10.034358	9.965641	30	2
59	45	9.582763	10.417237	9.617135	10.382865	10.034372	9.965628	15	1
60	30	9.582840	10.417160	9.617224	10.382776	10.034385	9.965615	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 30 ^m .		LOG. SINES, &c.						67 deg.	

1 st 30 ^m .		LOG. SINES, &c. (t.)						22 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	9.582840	10.417160	9.617224	10.382776	10.034385	9.965615	30	60
1	15	9.582916	10.417084	9.617314	10.382686	10.034398	9.965602	45	59
2	30	9.582992	10.417008	9.617403	10.382597	10.034411	9.965589	30	58
3	45	9.583068	10.416932	9.617492	10.382508	10.034424	9.965576	15	57
4	31	9.583144	10.416856	9.617581	10.382419	10.034437	9.965563	29	56
5	15	9.583221	10.416779	9.617671	10.382329	10.034450	9.965550	45	55
6	30	9.583297	10.416703	9.617760	10.382240	10.034463	9.965537	30	54
7	45	9.583373	10.416627	9.617849	10.382151	10.034476	9.965524	15	53
8	32	9.583449	10.416551	9.617938	10.382062	10.034489	9.965511	28	52
9	15	9.583525	10.416475	9.618028	10.381972	10.034503	9.965497	45	51
10	30	9.583601	10.416399	9.618117	10.381883	10.034516	9.965484	30	50
11	45	9.583677	10.416323	9.618206	10.381794	10.034529	9.965471	15	49
12	33	9.583753	10.416247	9.618295	10.381705	10.034542	9.965458	27	48
13	15	9.583830	10.416170	9.618384	10.381616	10.034555	9.965445	45	47
14	30	9.583906	10.416094	9.618474	10.381526	10.034568	9.965432	30	46
15	45	9.583982	10.416018	9.618563	10.381437	10.034581	9.965419	15	45
16	34	9.584058	10.415942	9.618652	10.381348	10.034594	9.965406	26	44
17	15	9.584134	10.415866	9.618741	10.381259	10.034607	9.965393	45	43
18	30	9.584210	10.415790	9.618830	10.381170	10.034621	9.965379	30	42
19	45	9.584285	10.415715	9.618919	10.381081	10.034634	9.965366	15	41
20	35	9.584361	10.415639	9.619008	10.380992	10.034647	9.965353	25	40
21	15	9.584437	10.415563	9.619097	10.380903	10.034660	9.965340	45	39
22	30	9.584513	10.415487	9.619186	10.380814	10.034673	9.965327	30	38
23	45	9.584589	10.415411	9.619275	10.380725	10.034686	9.965314	15	37
24	36	9.584665	10.415335	9.619364	10.380636	10.034699	9.965301	24	36
25	15	9.584741	10.415259	9.619453	10.380547	10.034713	9.965287	45	35
26	30	9.584817	10.415183	9.619542	10.380458	10.034726	9.965274	30	34
27	45	9.584893	10.415107	9.619631	10.380369	10.034739	9.965261	15	33
28	37	9.584968	10.415032	9.619720	10.380280	10.034752	9.965248	23	32
29	15	9.585044	10.414956	9.619809	10.380191	10.034765	9.965235	45	31
30	30	9.585120	10.414880	9.619898	10.380102	10.034778	9.965222	30	30
31	45	9.585196	10.414804	9.619987	10.380013	10.034792	9.965208	15	29
32	38	9.585272	10.414728	9.620076	10.379924	10.034805	9.965195	22	28
33	15	9.585347	10.414653	9.620165	10.379835	10.034818	9.965182	45	27
34	30	9.585423	10.414577	9.620254	10.379746	10.034831	9.965169	30	26
35	45	9.585499	10.414501	9.620343	10.379657	10.034844	9.965156	15	25
36	39	9.585574	10.414426	9.620432	10.379568	10.034857	9.965143	21	24
37	15	9.585650	10.414350	9.620521	10.379479	10.034871	9.965129	45	23
38	30	9.585726	10.414274	9.620609	10.379391	10.034884	9.965116	30	22
39	45	9.585801	10.414199	9.620698	10.379302	10.034897	9.965103	15	21
40	40	9.585877	10.414123	9.620787	10.379213	10.034910	9.965090	20	20
41	15	9.585953	10.414047	9.620876	10.379124	10.034923	9.965077	45	19
42	30	9.586028	10.413972	9.620965	10.379035	10.034937	9.965063	30	18
43	45	9.586104	10.413896	9.621054	10.378946	10.034950	9.965050	15	17
44	41	9.586179	10.413821	9.621142	10.378858	10.034963	9.965037	19	16
45	15	9.586255	10.413745	9.621231	10.378769	10.034976	9.965024	45	15
46	30	9.586330	10.413670	9.621320	10.378680	10.034989	9.965011	30	14
47	45	9.586406	10.413594	9.621409	10.378591	10.035003	9.964997	15	13
48	42	9.586482	10.413518	9.621497	10.378503	10.035016	9.964984	18	12
49	15	9.586557	10.413443	9.621586	10.378414	10.035029	9.964971	45	11
50	30	9.586632	10.413368	9.621675	10.378325	10.035042	9.964958	30	10
51	45	9.586708	10.413292	9.621763	10.378237	10.035055	9.964945	15	9
52	43	9.586783	10.413217	9.621852	10.378148	10.035069	9.964931	17	8
53	15	9.586859	10.413141	9.621941	10.378059	10.035082	9.964918	45	7
54	30	9.586934	10.413066	9.622029	10.377971	10.035095	9.964905	30	6
55	45	9.587010	10.412990	9.622118	10.377882	10.035108	9.964892	15	5
56	44	9.587085	10.412915	9.622207	10.377793	10.035122	9.964878	16	4
57	15	9.587160	10.412840	9.622295	10.377705	10.035135	9.964865	45	3
58	30	9.587236	10.412764	9.622384	10.377616	10.035148	9.964852	30	2
59	45	9.587311	10.412689	9.622472	10.377528	10.035161	9.964839	15	1
60	45	9.587386	10.412614	9.622561	10.377439	10.035174	9.964826	15	0
4 th 29 ^m .		LOG. SINES, &c.						67 deg.	
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.

LOG. SINES, &c. (L.)									
1 ^h 31 ^m .					22 deg.				
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.587386	10.412614	9.622561	10.377439	10.035174	9.964826	15	60
1	15	9.587462	10.412538	9.622649	10.377351	10.035188	9.964812	45	59
2	30	9.587537	10.412463	9.622738	10.377262	10.035201	9.964799	30	58
3	45	9.587612	10.412388	9.622826	10.377174	10.035214	9.964786	15	57
4	46	9.587688	10.412312	9.622915	10.377085	10.035227	9.964773	14	56
5	15	9.587763	10.412237	9.623003	10.376997	10.035241	9.964759	45	55
6	30	9.587838	10.412162	9.623092	10.376908	10.035254	9.964746	30	54
7	45	9.587913	10.412087	9.623180	10.376820	10.035267	9.964733	15	53
8	47	9.587988	10.412012	9.623269	10.376731	10.035281	9.964719	13	52
9	15	9.588064	10.411936	9.623357	10.376643	10.035294	9.964706	45	51
10	30	9.588139	10.411861	9.623446	10.376554	10.035307	9.964693	30	50
11	45	9.588215	10.411786	9.623534	10.376466	10.035320	9.964680	15	49
12	48	9.588289	10.411711	9.623623	10.376377	10.035334	9.964666	12	48
13	15	9.588364	10.411636	9.623711	10.376289	10.035347	9.964653	45	47
14	30	9.588439	10.411561	9.623799	10.376201	10.035360	9.964640	30	46
15	45	9.588514	10.411486	9.623888	10.376112	10.035373	9.964627	15	45
16	49	9.588590	10.411410	9.623976	10.376024	10.035387	9.964613	11	44
17	15	9.588665	10.411335	9.624065	10.375935	10.035400	9.964600	45	43
18	30	9.588740	10.411260	9.624153	10.375847	10.035413	9.964587	30	42
19	45	9.588815	10.411185	9.624241	10.375759	10.035427	9.964573	15	41
20	50	9.588890	10.411110	9.624330	10.375670	10.035440	9.964560	10	40
21	15	9.588965	10.411035	9.624418	10.375582	10.035453	9.964547	45	39
22	30	9.589040	10.410960	9.624506	10.375494	10.035466	9.964534	30	38
23	45	9.589115	10.410885	9.624594	10.375406	10.035480	9.964520	15	37
24	51	9.589190	10.410810	9.624683	10.375317	10.035493	9.964507	9	36
25	15	9.589265	10.410735	9.624771	10.375229	10.035506	9.964494	45	35
26	30	9.589339	10.410661	9.624859	10.375141	10.035520	9.964480	30	34
27	45	9.589414	10.410586	9.624947	10.375053	10.035533	9.964467	15	33
28	52	9.589489	10.410511	9.625036	10.374964	10.035546	9.964454	8	32
29	15	9.589564	10.410436	9.625124	10.374876	10.035560	9.964440	45	31
30	30	9.589639	10.410361	9.625212	10.374788	10.035573	9.964427	30	30
31	45	9.589714	10.410286	9.625300	10.374700	10.035586	9.964414	15	29
32	53	9.589789	10.410211	9.625388	10.374612	10.035600	9.964400	7	28
33	15	9.589864	10.410136	9.625476	10.374524	10.035613	9.964387	45	27
34	30	9.589939	10.410061	9.625565	10.374435	10.035626	9.964374	30	26
35	45	9.590013	10.409987	9.625653	10.374347	10.035640	9.964360	15	25
36	54	9.590088	10.409912	9.625741	10.374259	10.035653	9.964347	6	24
37	15	9.590163	10.409837	9.625829	10.374171	10.035666	9.964334	45	23
38	30	9.590237	10.409763	9.625917	10.374083	10.035680	9.964320	30	22
39	45	9.590312	10.409688	9.626005	10.373995	10.035693	9.964307	15	21
40	55	9.590387	10.409613	9.626093	10.373907	10.035706	9.964294	5	20
41	15	9.590462	10.409538	9.626181	10.373819	10.035720	9.964280	45	19
42	30	9.590537	10.409464	9.626269	10.373731	10.035733	9.964267	30	18
43	45	9.590611	10.409389	9.626357	10.373643	10.035746	9.964254	15	17
44	56	9.590686	10.409314	9.626445	10.373555	10.035760	9.964240	4	16
45	15	9.590760	10.409240	9.626533	10.373467	10.035773	9.964227	45	15
46	30	9.590835	10.409165	9.626621	10.373379	10.035787	9.964213	30	14
47	45	9.590909	10.409091	9.626709	10.373291	10.035800	9.964200	15	13
48	57	9.590984	10.409016	9.626797	10.373203	10.035813	9.964187	3	12
49	15	9.591059	10.408941	9.626885	10.373115	10.035827	9.964173	45	11
50	30	9.591133	10.408867	9.626973	10.373027	10.035840	9.964160	30	10
51	45	9.591208	10.408792	9.627061	10.372939	10.035853	9.964147	15	9
52	58	9.591282	10.408718	9.627149	10.372851	10.035867	9.964133	2	8
53	15	9.591357	10.408643	9.627237	10.372763	10.035880	9.964120	45	7
54	30	9.591431	10.408569	9.627325	10.372675	10.035894	9.964106	30	6
55	45	9.591506	10.408494	9.627413	10.372587	10.035907	9.964093	15	5
56	59	9.591580	10.408420	9.627501	10.372499	10.035920	9.964080	1	4
57	15	9.591655	10.408345	9.627588	10.372412	10.035934	9.964066	45	3
58	30	9.591729	10.408271	9.627676	10.372324	10.035947	9.964053	30	2
59	45	9.591804	10.408196	9.627764	10.372236	10.035961	9.964039	15	1
60	60	9.591878	10.408122	9.627852	10.372148	10.035974	9.964026	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 28 ^m .					67 deg.				

1 ^h 32 ^m .		LOG. SINES, &c. (t.)						23 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.591878	10.408122	9.627852	10.372148	10.035974	9.964026	60	60
1	15	9.591952	10.408048	9.627940	10.372060	10.035987	9.964013	45	59
2	30	9.592027	10.407973	9.628027	10.371973	10.036001	9.963999	30	58
3	45	9.592101	10.407899	9.628115	10.371885	10.036014	9.963986	15	57
4	1	9.592175	10.407825	9.628203	10.371797	10.036028	9.963972	59	56
5	15	9.592250	10.407750	9.628291	10.371709	10.036041	9.963959	45	55
6	30	9.592324	10.407676	9.628379	10.371621	10.036054	9.963946	30	54
7	45	9.592398	10.407602	9.628466	10.371534	10.036068	9.963932	15	53
8	2	9.592473	10.407527	9.628554	10.371446	10.036081	9.963919	58	52
9	15	9.592547	10.407453	9.628642	10.371358	10.036095	9.963905	45	51
10	30	9.592621	10.407379	9.628729	10.371271	10.036108	9.963892	30	50
11	45	9.592696	10.407304	9.628817	10.371183	10.036122	9.963878	15	49
12	3	9.592770	10.407230	9.628905	10.371095	10.036135	9.963865	57	48
13	15	9.592844	10.407156	9.628992	10.371008	10.036148	9.963852	45	47
14	30	9.592918	10.407082	9.629080	10.370920	10.036162	9.963838	30	46
15	45	9.592992	10.407008	9.629168	10.370832	10.036175	9.963825	15	45
16	4	9.593067	10.406933	9.629255	10.370745	10.036189	9.963811	56	44
17	15	9.593141	10.406859	9.629343	10.370657	10.036202	9.963798	45	43
18	30	9.593215	10.406785	9.629430	10.370570	10.036216	9.963784	30	42
19	45	9.593289	10.406711	9.629518	10.370482	10.036229	9.963771	15	41
20	5	9.593363	10.406637	9.629606	10.370394	10.036243	9.963757	55	40
21	15	9.593437	10.406563	9.629693	10.370307	10.036256	9.963744	45	39
22	30	9.593511	10.406489	9.629781	10.370219	10.036270	9.963730	30	38
23	45	9.593585	10.406415	9.629868	10.370132	10.036283	9.963717	15	37
24	6	9.593659	10.406341	9.629956	10.370044	10.036296	9.963704	54	36
25	15	9.593733	10.406267	9.630043	10.369957	10.036310	9.963690	45	35
26	30	9.593807	10.406193	9.630131	10.369869	10.036323	9.963677	30	34
27	45	9.593881	10.406119	9.630218	10.369782	10.036337	9.963663	15	33
28	7	9.593955	10.406045	9.630306	10.369694	10.036350	9.963650	53	32
29	15	9.594029	10.405971	9.630393	10.369607	10.036364	9.963636	45	31
30	30	9.594103	10.405897	9.630481	10.369519	10.036377	9.963623	30	30
31	45	9.594177	10.405823	9.630568	10.369432	10.036391	9.963609	15	29
32	8	9.594251	10.405749	9.630656	10.369344	10.036404	9.963596	52	28
33	15	9.594325	10.405675	9.630743	10.369257	10.036418	9.963582	45	27
34	30	9.594399	10.405601	9.630830	10.369170	10.036431	9.963569	30	26
35	45	9.594473	10.405527	9.630918	10.369082	10.036445	9.963555	15	25
36	9	9.594547	10.405453	9.631005	10.368995	10.036458	9.963542	51	24
37	15	9.594621	10.405379	9.631092	10.368908	10.036472	9.963528	45	23
38	30	9.594695	10.405305	9.631180	10.368820	10.036485	9.963515	30	22
39	45	9.594768	10.405232	9.631267	10.368733	10.036499	9.963501	15	21
40	10	9.594842	10.405158	9.631354	10.368646	10.036512	9.963488	50	20
41	15	9.594916	10.405084	9.631442	10.368558	10.036526	9.963474	45	19
42	30	9.594990	10.405010	9.631529	10.368471	10.036539	9.963461	30	18
43	45	9.595064	10.404936	9.631616	10.368384	10.036553	9.963447	15	17
44	11	9.595137	10.404863	9.631704	10.368296	10.036566	9.963434	49	16
45	15	9.595211	10.404789	9.631791	10.368209	10.036580	9.963420	45	15
46	30	9.595285	10.404715	9.631878	10.368122	10.036594	9.963406	30	14
47	45	9.595358	10.404642	9.631965	10.368035	10.036607	9.963393	15	13
48	12	9.595432	10.404568	9.632053	10.367947	10.036621	9.963379	48	12
49	15	9.595506	10.404494	9.632140	10.367860	10.036634	9.963366	45	11
50	30	9.595579	10.404421	9.632227	10.367773	10.036648	9.963352	30	10
51	45	9.595653	10.404347	9.632314	10.367686	10.036661	9.963339	15	9
52	13	9.595727	10.404273	9.632401	10.367599	10.036675	9.963325	47	8
53	15	9.595800	10.404200	9.632489	10.367511	10.036688	9.963312	45	7
54	30	9.595874	10.404126	9.632576	10.367424	10.036702	9.963298	30	6
55	45	9.595948	10.404052	9.632663	10.367337	10.036715	9.963285	15	5
56	14	9.596021	10.403979	9.632750	10.367250	10.036729	9.963271	46	4
57	15	9.596095	10.403905	9.632837	10.367163	10.036743	9.963257	45	3
58	30	9.596168	10.403832	9.632924	10.367076	10.036756	9.963244	30	2
59	45	9.596242	10.403758	9.633011	10.366989	10.036770	9.963230	15	1
60	15	9.596315	10.403685	9.633098	10.366902	10.036783	9.963217	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 27 ^m .		LOG. SINES, &c.						66 deg.	

1 ^h 33 ^m .		LOG. SINES, &c. (t.)						23 deg.	
sec.	"	sine	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"
0	15	9.596315	10.403685	9.633098	10.366902	10.036783	9.963217	45	
1	15	9.596389	10.403611	9.633186	10.366814	10.036797	9.963203	45	
2	30	9.596462	10.403538	9.633273	10.366727	10.036810	9.963190	30	
3	45	9.596536	10.403464	9.633360	10.366640	10.036824	9.963176	15	
4	16	9.596609	10.403391	9.633447	10.366553	10.036838	9.963162	44	
5	15	9.596683	10.403317	9.633534	10.366466	10.036851	9.963149	45	
6	30	9.596756	10.403244	9.633621	10.366379	10.036865	9.963135	30	
7	45	9.596830	10.403170	9.633708	10.366292	10.036878	9.963122	15	
8	17	9.596903	10.403097	9.633795	10.366205	10.036892	9.963108	43	
9	15	9.596976	10.403024	9.633882	10.366118	10.036905	9.963095	45	
10	30	9.597050	10.402950	9.633969	10.366031	10.036919	9.963081	30	
11	45	9.597123	10.402877	9.634056	10.365944	10.036933	9.963067	15	
12	18	9.597196	10.402804	9.634143	10.365857	10.036946	9.963054	42	
13	15	9.597270	10.402730	9.634230	10.365770	10.036960	9.963040	45	
14	30	9.597343	10.402657	9.634316	10.365684	10.036973	9.963027	30	
15	45	9.597416	10.402584	9.634403	10.365597	10.036987	9.963013	15	
16	19	9.597490	10.402510	9.634490	10.365510	10.037001	9.962999	41	
17	15	9.597563	10.402437	9.634577	10.365423	10.037014	9.962986	45	
18	30	9.597636	10.402364	9.634664	10.365336	10.037028	9.962972	30	
19	45	9.597709	10.402291	9.634751	10.365249	10.037042	9.962958	15	
20	20	9.597783	10.402217	9.634838	10.365162	10.037055	9.962945	40	
21	15	9.597856	10.402144	9.634925	10.365075	10.037069	9.962931	45	
22	30	9.597929	10.402071	9.635011	10.364989	10.037082	9.962918	30	
23	45	9.598002	10.401998	9.635098	10.364902	10.037096	9.962904	15	
24	21	9.598075	10.401925	9.635185	10.364815	10.037110	9.962890	39	
25	15	9.598149	10.401851	9.635272	10.364728	10.037123	9.962877	45	
26	30	9.598222	10.401778	9.635359	10.364641	10.037137	9.962863	30	
27	45	9.598295	10.401705	9.635445	10.364555	10.037151	9.962849	15	
28	22	9.598368	10.401632	9.635532	10.364468	10.037164	9.962836	38	
29	15	9.598441	10.401559	9.635619	10.364381	10.037178	9.962822	45	
30	30	9.598514	10.401486	9.635706	10.364294	10.037192	9.962808	30	
31	45	9.598587	10.401413	9.635792	10.364208	10.037205	9.962795	15	
32	23	9.598660	10.401340	9.635879	10.364121	10.037219	9.962781	37	
33	15	9.598733	10.401267	9.635966	10.364034	10.037232	9.962768	45	
34	30	9.598806	10.401194	9.636052	10.363948	10.037246	9.962754	30	
35	45	9.598879	10.401121	9.636139	10.363861	10.037260	9.962740	15	
36	24	9.598952	10.401048	9.636226	10.363774	10.037273	9.962727	36	
37	15	9.599025	10.400975	9.636312	10.363688	10.037287	9.962713	45	
38	30	9.599098	10.400902	9.636399	10.363601	10.037301	9.962699	30	
39	45	9.599171	10.400829	9.636486	10.363514	10.037314	9.962686	15	
40	25	9.599244	10.400756	9.636572	10.363428	10.037328	9.962672	35	
41	15	9.599317	10.400683	9.636659	10.363341	10.037342	9.962658	45	
42	30	9.599390	10.400610	9.636745	10.363255	10.037356	9.962644	30	
43	45	9.599463	10.400537	9.636832	10.363168	10.037369	9.962631	15	
44	26	9.599536	10.400464	9.636918	10.363082	10.037383	9.962617	34	
45	15	9.599608	10.400392	9.637005	10.362995	10.037397	9.962603	45	
46	30	9.599681	10.400319	9.637092	10.362908	10.037410	9.962590	30	
47	45	9.599754	10.400246	9.637178	10.362822	10.037424	9.962576	15	
48	27	9.599827	10.400173	9.637265	10.362735	10.037438	9.962562	33	
49	15	9.599900	10.400100	9.637351	10.362649	10.037451	9.962549	45	
50	30	9.599973	10.400027	9.637438	10.362562	10.037465	9.962535	30	
51	45	9.600045	10.399955	9.637524	10.362476	10.037479	9.962521	15	
52	28	9.600118	10.399882	9.637611	10.362389	10.037492	9.962508	32	
53	15	9.600191	10.399809	9.637697	10.362303	10.037506	9.962494	45	
54	30	9.600264	10.399736	9.637783	10.362217	10.037520	9.962480	30	
55	45	9.600336	10.399664	9.637870	10.362130	10.037534	9.962466	15	
56	29	9.600409	10.399591	9.637956	10.362044	10.037547	9.962453	31	
57	15	9.600482	10.399518	9.638043	10.361957	10.037561	9.962439	45	
58	30	9.600554	10.399446	9.638129	10.361871	10.037575	9.962425	30	
59	45	9.600627	10.399373	9.638215	10.361785	10.037589	9.962411	15	
60	30	9.600700	10.399300	9.638302	10.361698	10.037602	9.962398	30	
sec.	"	sine.	cosecant.	cotangent.	tangent.	cosecant.	sine.	"	"
4 ^h 26 ^m .		LOG. SINES, &c.						66 deg.	

1 ^h 34 ^m .		LOG. SINES, &c. (t.)						23 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	9.600700	10.399300	9.638302	10.361698	10.037602	9.962398	30	60
1	15	9.600772	10.399228	9.638388	10.361612	10.037616	9.962384	45	59
2	30	9.600845	10.399155	9.638475	10.361525	10.037630	9.962370	30	58
3	45	9.600917	10.399083	9.638561	10.361439	10.037643	9.962357	15	57
4	31	9.600990	10.399010	9.638647	10.361353	10.037657	9.962343	29	56
5	15	9.601063	10.398937	9.638734	10.361266	10.037671	9.962329	45	55
6	30	9.601135	10.398865	9.638820	10.361180	10.037685	9.962315	30	54
7	45	9.601208	10.398792	9.638906	10.361094	10.037698	9.962302	15	53
8	32	9.601280	10.398720	9.638992	10.361008	10.037712	9.962288	28	52
9	15	9.601353	10.398647	9.639079	10.360921	10.037726	9.962274	45	51
10	30	9.601425	10.398575	9.639165	10.360835	10.037740	9.962260	30	50
11	45	9.601498	10.398502	9.639251	10.360749	10.037753	9.962247	15	49
12	33	9.601570	10.398430	9.639337	10.360663	10.037767	9.962233	27	48
13	15	9.601643	10.398357	9.639424	10.360576	10.037781	9.962219	45	47
14	30	9.601715	10.398285	9.639510	10.360490	10.037795	9.962205	30	46
15	45	9.601788	10.398212	9.639596	10.360404	10.037809	9.962191	15	45
16	34	9.601860	10.398140	9.639682	10.360318	10.037822	9.962178	26	44
17	15	9.601932	10.398068	9.639768	10.360232	10.037836	9.962164	45	43
18	30	9.602005	10.397995	9.639855	10.360145	10.037850	9.962150	30	42
19	45	9.602077	10.397923	9.639941	10.360059	10.037864	9.962136	15	41
20	35	9.602149	10.397851	9.640027	10.359973	10.037877	9.962123	25	40
21	15	9.602222	10.397778	9.640113	10.359887	10.037891	9.962109	45	39
22	30	9.602294	10.397706	9.640199	10.359801	10.037905	9.962095	30	38
23	45	9.602366	10.397634	9.640285	10.359715	10.037919	9.962081	15	37
24	36	9.602439	10.397561	9.640371	10.359629	10.037933	9.962067	24	36
25	15	9.602511	10.397489	9.640457	10.359543	10.037946	9.962054	45	35
26	30	9.602583	10.397417	9.640543	10.359457	10.037960	9.962040	30	34
27	45	9.602656	10.397344	9.640630	10.359370	10.037974	9.962026	15	33
28	37	9.602728	10.397272	9.640716	10.359284	10.037988	9.962012	23	32
29	15	9.602800	10.397200	9.640802	10.359198	10.038002	9.961998	45	31
30	30	9.602872	10.397128	9.640888	10.359112	10.038015	9.961985	30	30
31	45	9.602944	10.397056	9.640974	10.359026	10.038029	9.961971	15	29
32	38	9.603017	10.396983	9.641060	10.358940	10.038043	9.961957	22	28
33	15	9.603089	10.396911	9.641146	10.358854	10.038057	9.961943	45	27
34	30	9.603161	10.396839	9.641232	10.358768	10.038071	9.961929	30	26
35	45	9.603233	10.396767	9.641318	10.358682	10.038085	9.961915	15	25
36	39	9.603305	10.396695	9.641404	10.358596	10.038098	9.961902	21	24
37	15	9.603377	10.396623	9.641489	10.358511	10.038112	9.961888	45	23
38	30	9.603449	10.396551	9.641575	10.358425	10.038126	9.961874	30	22
39	45	9.603521	10.396479	9.641661	10.358339	10.038140	9.961860	15	21
40	40	9.603594	10.396406	9.641747	10.358253	10.038154	9.961846	20	20
41	15	9.603666	10.396334	9.641833	10.358167	10.038168	9.961832	45	19
42	30	9.603738	10.396262	9.641919	10.358081	10.038181	9.961819	30	18
43	45	9.603810	10.396190	9.642005	10.357995	10.038195	9.961805	15	17
44	41	9.603882	10.396118	9.642091	10.357909	10.038209	9.961791	19	16
45	15	9.603954	10.396046	9.642177	10.357823	10.038223	9.961777	45	15
46	30	9.604026	10.395974	9.642262	10.357738	10.038237	9.961763	30	14
47	45	9.604098	10.395902	9.642348	10.357652	10.038251	9.961749	15	13
48	42	9.604170	10.395830	9.642434	10.357566	10.038265	9.961735	18	12
49	15	9.604242	10.395758	9.642520	10.357480	10.038278	9.961722	45	11
50	30	9.604313	10.395687	9.642606	10.357394	10.038292	9.961708	30	10
51	45	9.604385	10.395615	9.642691	10.357309	10.038306	9.961694	15	9
52	43	9.604457	10.395543	9.642777	10.357223	10.038320	9.961680	17	8
53	15	9.604529	10.395471	9.642863	10.357137	10.038334	9.961666	45	7
54	30	9.604601	10.395399	9.642949	10.357051	10.038348	9.961652	30	6
55	45	9.604673	10.395327	9.643035	10.356965	10.038362	9.961638	15	5
56	44	9.604745	10.395255	9.643120	10.356880	10.038376	9.961624	16	4
57	15	9.604817	10.395183	9.643206	10.356794	10.038389	9.961611	45	3
58	30	9.604888	10.395112	9.643292	10.356708	10.038403	9.961597	30	2
59	45	9.604960	10.395040	9.643377	10.356623	10.038417	9.961583	15	1
60	45	9.605032	10.394968	9.643463	10.356537	10.038431	9.961569	15	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 25 ^m .		LOG. SINES, &c.						66 deg.	

1 ^h 35 ^m .		LOG. SINES, &c. (t.)					23 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"
0	45	9.605032	10.394968	9.643463	10.356537	10.038431	9.961569	1 ^h
1	15	9.605104	10.394896	9.643549	10.356451	10.038445	9.961555	45
2	30	9.605175	10.394825	9.643634	10.356366	10.038459	9.961541	30
3	45	9.605247	10.394753	9.643720	10.356280	10.038473	9.961527	15
4	46	9.605319	10.394681	9.643806	10.356194	10.038487	9.961513	1 ^h
5	15	9.605391	10.394609	9.643891	10.356109	10.038501	9.961499	45
6	30	9.605462	10.394538	9.643977	10.356023	10.038515	9.961485	30
7	45	9.605534	10.394466	9.644062	10.355938	10.038528	9.961472	15
8	47	9.605606	10.394394	9.644148	10.355852	10.038542	9.961458	13
9	15	9.605677	10.394323	9.644234	10.355766	10.038556	9.961444	45
10	30	9.605749	10.394251	9.644319	10.355681	10.038570	9.961430	30
11	45	9.605821	10.394179	9.644405	10.355595	10.038584	9.961416	15
12	48	9.605892	10.394108	9.644490	10.355510	10.038598	9.961402	12
13	15	9.605964	10.394036	9.644576	10.355424	10.038612	9.961388	45
14	30	9.606035	10.393965	9.644661	10.355339	10.038626	9.961374	30
15	45	9.606107	10.393893	9.644747	10.355253	10.038640	9.961360	15
16	49	9.606179	10.393821	9.644832	10.355168	10.038654	9.961346	11
17	15	9.606250	10.393750	9.644918	10.355082	10.038668	9.961332	45
18	30	9.606322	10.393678	9.645003	10.354997	10.038682	9.961318	30
19	45	9.606393	10.393607	9.645089	10.354911	10.038696	9.961304	15
20	50	9.606465	10.393535	9.645174	10.354826	10.038710	9.961290	10
21	15	9.606536	10.393464	9.645260	10.354740	10.038724	9.961276	45
22	30	9.606608	10.393392	9.645345	10.354655	10.038738	9.961262	30
23	45	9.606679	10.393321	9.645431	10.354569	10.038751	9.961249	15
24	51	9.606751	10.393249	9.645516	10.354484	10.038765	9.961235	9
25	15	9.606822	10.393178	9.645601	10.354399	10.038779	9.961221	45
26	30	9.606893	10.393107	9.645687	10.354313	10.038793	9.961207	30
27	45	9.606965	10.393035	9.645772	10.354228	10.038807	9.961193	15
28	52	9.607036	10.392964	9.645857	10.354143	10.038821	9.961179	8
29	15	9.607108	10.392892	9.645943	10.354057	10.038835	9.961165	45
30	30	9.607179	10.392821	9.646028	10.353972	10.038849	9.961151	30
31	45	9.607250	10.392750	9.646113	10.353887	10.038863	9.961137	15
32	53	9.607322	10.392678	9.646199	10.353801	10.038877	9.961123	7
33	15	9.607393	10.392607	9.646284	10.353716	10.038891	9.961109	45
34	30	9.607464	10.392536	9.646369	10.353631	10.038905	9.961095	30
35	45	9.607535	10.392465	9.646455	10.353545	10.038919	9.961081	15
36	54	9.607607	10.392393	9.646540	10.353460	10.038933	9.961067	6
37	15	9.607678	10.392322	9.646625	10.353375	10.038947	9.961053	45
38	30	9.607749	10.392251	9.646710	10.353290	10.038961	9.961039	30
39	45	9.607821	10.392179	9.646796	10.353204	10.038975	9.961025	15
40	55	9.607892	10.392108	9.646881	10.353119	10.038989	9.961011	5
41	15	9.607963	10.392037	9.646966	10.353034	10.039003	9.960997	45
42	30	9.608034	10.391966	9.647051	10.352949	10.039017	9.960983	30
43	45	9.608105	10.391895	9.647137	10.352863	10.039031	9.960969	15
44	56	9.608176	10.391824	9.647222	10.352777	10.039045	9.960955	4
45	15	9.608248	10.391752	9.647307	10.352693	10.039059	9.960941	45
46	30	9.608319	10.391681	9.647392	10.352608	10.039073	9.960927	30
47	45	9.608390	10.391610	9.647477	10.352523	10.039087	9.960913	15
48	57	9.608461	10.391539	9.647562	10.352438	10.039101	9.960899	3
49	15	9.608532	10.391468	9.647647	10.352353	10.039115	9.960885	45
50	30	9.608603	10.391397	9.647733	10.352267	10.039129	9.960871	30
51	45	9.608674	10.391326	9.647818	10.352182	10.039143	9.960857	15
52	58	9.608745	10.391255	9.647903	10.352097	10.039157	9.960843	2
53	15	9.608816	10.391184	9.647988	10.352012	10.039172	9.960828	45
54	30	9.608887	10.391113	9.648073	10.351927	10.039186	9.960814	30
55	45	9.608958	10.391042	9.648158	10.351842	10.039200	9.960800	15
56	59	9.609029	10.390971	9.648243	10.351757	10.039214	9.960786	1
57	15	9.609100	10.390900	9.648328	10.351672	10.039228	9.960772	45
58	30	9.609171	10.390829	9.648413	10.351587	10.039242	9.960758	30
59	45	9.609242	10.390758	9.648498	10.351502	10.039256	9.960744	15
60	60	9.609313	10.390687	9.648583	10.351417	10.039270	9.960730	0
4 ^h 24 ^m .		cosine.	secant	cotangent.	tangent.	cosecant.	sine.	"
		LOG. SINES, &c.					66 deg.	

1 st 36 ^m		LOG. SINES, &c. (t.)						24 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.609313	10.390687	9.646583	10.351417	10.039270	9.960730	60	60
1	15	9.609384	10.390616	9.648668	10.351332	10.039284	9.960716	45	59
2	30	9.609455	10.390545	9.648753	10.351247	10.039298	9.960702	30	58
3	45	9.609526	10.390474	9.648838	10.351162	10.039312	9.960688	15	57
4	1	9.609597	10.390403	9.648923	10.351077	10.039326	9.960674	59	56
5	15	9.609668	10.390332	9.649008	10.350992	10.039340	9.960660	45	55
6	30	9.609739	10.390261	9.649093	10.350907	10.039354	9.960646	30	54
7	45	9.609809	10.390191	9.649178	10.350822	10.039368	9.960632	15	53
8	2	9.609880	10.390120	9.649263	10.350737	10.039382	9.960618	58	52
9	15	9.609951	10.390049	9.649348	10.350652	10.039397	9.960603	45	51
10	30	9.610022	10.389978	9.649433	10.350567	10.039411	9.960589	30	50
11	45	9.610093	10.389907	9.649517	10.350483	10.039425	9.960575	15	49
12	3	9.610163	10.389837	9.649602	10.350398	10.039439	9.960561	57	48
13	15	9.610234	10.389766	9.649687	10.350313	10.039453	9.960547	45	47
14	30	9.610305	10.389695	9.649772	10.350228	10.039467	9.960533	30	46
15	45	9.610376	10.389624	9.649857	10.350143	10.039481	9.960519	15	45
16	4	9.610446	10.389554	9.649942	10.350058	10.039495	9.960505	56	44
17	15	9.610517	10.389483	9.650026	10.349974	10.039509	9.960491	45	43
18	30	9.610588	10.389412	9.650111	10.349889	10.039523	9.960477	30	42
19	45	9.610659	10.389341	9.650196	10.349804	10.039538	9.960462	15	41
20	5	9.610729	10.389271	9.650281	10.349719	10.039552	9.960448	55	40
21	15	9.610800	10.389200	9.650366	10.349634	10.039566	9.960434	45	39
22	30	9.610870	10.389130	9.650450	10.349550	10.039580	9.960420	30	38
23	45	9.610941	10.389059	9.650535	10.349465	10.039594	9.960406	15	37
24	6	9.611012	10.388988	9.650620	10.349380	10.039608	9.960392	54	36
25	15	9.611082	10.388918	9.650705	10.349295	10.039622	9.960378	45	35
26	30	9.611153	10.388847	9.650789	10.349211	10.039636	9.960364	30	34
27	45	9.611223	10.388777	9.650874	10.349126	10.039651	9.960349	15	33
28	7	9.611294	10.388706	9.650959	10.349041	10.039665	9.960335	53	32
29	15	9.611365	10.388635	9.651043	10.348957	10.039679	9.960321	45	31
30	30	9.611435	10.388565	9.651128	10.348872	10.039693	9.960307	30	30
31	45	9.611506	10.388494	9.651213	10.348787	10.039707	9.960293	15	29
32	8	9.611576	10.388424	9.651297	10.348703	10.039721	9.960279	52	28
33	15	9.611647	10.388353	9.651382	10.348618	10.039735	9.960265	45	27
34	30	9.611717	10.388283	9.651467	10.348533	10.039750	9.960250	30	26
35	45	9.611788	10.388212	9.651551	10.348449	10.039764	9.960236	15	25
36	9	9.611858	10.388142	9.651636	10.348364	10.039778	9.960222	51	24
37	15	9.611928	10.388072	9.651720	10.348280	10.039792	9.960208	45	23
38	30	9.611999	10.388001	9.651805	10.348195	10.039806	9.960194	30	22
39	45	9.612069	10.387931	9.651890	10.348110	10.039820	9.960180	15	21
40	10	9.612140	10.387860	9.651974	10.348026	10.039835	9.960165	50	20
41	15	9.612210	10.387790	9.652059	10.347941	10.039849	9.960151	45	19
42	30	9.612280	10.387720	9.652143	10.347857	10.039863	9.960137	30	18
43	45	9.612351	10.387649	9.652228	10.347772	10.039877	9.960123	15	17
44	11	9.612421	10.387579	9.652312	10.347688	10.039891	9.960109	49	16
45	15	9.612491	10.387509	9.652397	10.347603	10.039905	9.960095	45	15
46	30	9.612562	10.387438	9.652481	10.347519	10.039920	9.960080	30	14
47	45	9.612632	10.387368	9.652566	10.347434	10.039934	9.960066	15	13
48	12	9.612702	10.387298	9.652650	10.347350	10.039948	9.960052	48	12
49	15	9.612773	10.387227	9.652735	10.347265	10.039962	9.960038	45	11
50	30	9.612843	10.387157	9.652819	10.347181	10.039976	9.960024	30	10
51	45	9.612913	10.387087	9.652904	10.347096	10.039991	9.960009	15	9
52	13	9.612983	10.387017	9.652988	10.347012	10.040005	9.959995	47	8
53	15	9.613053	10.386947	9.653072	10.346928	10.040019	9.959981	45	7
54	30	9.613124	10.386876	9.653157	10.346843	10.040033	9.959967	30	6
55	45	9.613194	10.386806	9.653241	10.346759	10.040047	9.959953	15	5
56	14	9.613264	10.386736	9.653326	10.346674	10.040062	9.959938	46	4
57	15	9.613334	10.386666	9.653410	10.346590	10.040076	9.959924	45	3
58	30	9.613404	10.386596	9.653494	10.346506	10.040090	9.959910	30	2
59	45	9.613474	10.386526	9.653579	10.346421	10.040104	9.959896	15	1
60	15	9.613545	10.386455	9.653663	10.346337	10.040119	9.959881	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 th 23 ^m		LOG. SINES, &c.						65 deg.	

1 ^h 37 ^m		LOG. SINES, &c. (L.)						24 deg.	
sec.		sine.	cosecant.	tangent.	cotangent.	secant.	cosine.		sec.
0	15	9.613545	10.386455	9.653663	10.346337	10.040119	9.959881	45	60
1	15	9.613615	10.386385	9.653747	10.346253	10.040133	9.959867	45	59
2	30	9.613685	10.386315	9.653832	10.346168	10.040147	9.959853	30	58
3	45	9.613755	10.386245	9.653916	10.346084	10.040161	9.959839	15	57
4	16	9.613825	10.386175	9.654000	10.346000	10.040175	9.959825	44	56
5	15	9.613895	10.386105	9.654085	10.345915	10.040190	9.959810	45	55
6	30	9.613965	10.386035	9.654169	10.345831	10.040204	9.959796	30	54
7	45	9.614035	10.385965	9.654253	10.345747	10.040218	9.959782	15	53
8	17	9.614105	10.385895	9.654337	10.345663	10.040232	9.959768	43	52
9	15	9.614175	10.385825	9.654422	10.345578	10.040247	9.959753	45	51
10	30	9.614245	10.385755	9.654506	10.345494	10.040261	9.959739	30	50
11	45	9.614315	10.385685	9.654590	10.345410	10.040275	9.959725	15	49
12	18	9.614385	10.385615	9.654674	10.345326	10.040289	9.959711	42	48
13	15	9.614455	10.385545	9.654759	10.345241	10.040304	9.959696	45	47
14	30	9.614525	10.385475	9.654843	10.345157	10.040318	9.959682	30	46
15	45	9.614595	10.385405	9.654927	10.345073	10.040332	9.959668	15	45
16	19	9.614665	10.385335	9.655011	10.344989	10.040347	9.959653	41	44
17	15	9.614735	10.385265	9.655095	10.344905	10.040361	9.959639	45	43
18	30	9.614804	10.385196	9.655179	10.344821	10.040375	9.959625	30	42
19	45	9.614874	10.385126	9.655264	10.344736	10.040389	9.959611	15	41
20	20	9.614944	10.385056	9.655348	10.344652	10.040404	9.959596	40	40
21	15	9.615014	10.384986	9.655432	10.344568	10.040418	9.959582	45	39
22	30	9.615084	10.384916	9.655516	10.344484	10.040432	9.959568	30	38
23	45	9.615154	10.384846	9.655600	10.344400	10.040446	9.959554	15	37
24	21	9.615223	10.384777	9.655684	10.344316	10.040461	9.959539	39	36
25	15	9.615293	10.384707	9.655768	10.344232	10.040475	9.959525	45	35
26	30	9.615363	10.384637	9.655852	10.344148	10.040489	9.959511	30	34
27	45	9.615433	10.384567	9.655936	10.344064	10.040504	9.959496	15	33
28	22	9.615502	10.384498	9.656020	10.343980	10.040518	9.959482	38	32
29	15	9.615572	10.384428	9.656104	10.343896	10.040532	9.959468	45	31
30	30	9.615642	10.384358	9.656188	10.343812	10.040547	9.959453	30	30
31	45	9.615712	10.384288	9.656272	10.343728	10.040561	9.959439	15	29
32	23	9.615781	10.384219	9.656356	10.343644	10.040575	9.959425	37	28
33	15	9.615851	10.384149	9.656440	10.343560	10.040590	9.959410	45	27
34	30	9.615921	10.384079	9.656524	10.343476	10.040604	9.959396	30	26
35	45	9.615990	10.384010	9.656608	10.343392	10.040618	9.959382	15	25
36	24	9.616060	10.383940	9.656692	10.343308	10.040633	9.959367	36	24
37	15	9.616129	10.383871	9.656776	10.343224	10.040647	9.959353	45	23
38	30	9.616199	10.383801	9.656860	10.343140	10.040661	9.959339	30	22
39	45	9.616269	10.383731	9.656944	10.343056	10.040675	9.959325	15	21
40	25	9.616338	10.383662	9.657028	10.342972	10.040690	9.959310	35	20
41	15	9.616408	10.383592	9.657112	10.342888	10.040704	9.959296	45	19
42	30	9.616477	10.383523	9.657196	10.342804	10.040719	9.959281	30	18
43	45	9.616547	10.383453	9.657280	10.342720	10.040733	9.959267	15	17
44	26	9.616616	10.383384	9.657364	10.342636	10.040747	9.959253	34	16
45	15	9.616686	10.383314	9.657447	10.342553	10.040762	9.959238	45	15
46	30	9.616755	10.383245	9.657531	10.342469	10.040776	9.959224	30	14
47	45	9.616825	10.383175	9.657615	10.342385	10.040790	9.959210	15	13
48	27	9.616894	10.383106	9.657699	10.342301	10.040805	9.959195	33	12
49	15	9.616964	10.383036	9.657783	10.342217	10.040819	9.959181	45	11
50	30	9.617033	10.382967	9.657867	10.342133	10.040833	9.959167	30	10
51	45	9.617103	10.382897	9.657950	10.342050	10.040848	9.959152	15	9
52	28	9.617172	10.382828	9.658034	10.341966	10.040862	9.959138	32	8
53	15	9.617241	10.382759	9.658118	10.341882	10.040876	9.959124	45	7
54	30	9.617311	10.382689	9.658202	10.341798	10.040891	9.959109	30	6
55	45	9.617380	10.382620	9.658285	10.341715	10.040905	9.959095	15	5
56	29	9.617450	10.382550	9.658369	10.341631	10.040920	9.959080	31	4
57	15	9.617519	10.382481	9.658453	10.341547	10.040934	9.959066	45	3
58	30	9.617588	10.382412	9.658537	10.341463	10.040948	9.959052	30	2
59	45	9.617658	10.382342	9.658620	10.341380	10.040963	9.959037	15	1
60	30	9.617727	10.382273	9.658704	10.341296	10.040977	9.959023	30	0
sec.		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
4 ^h 22 ^m		LOG. SINES, &c.						65 deg.	

1 ^h 38 ^m .		LOG. SINES, &c. (t.)						24 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	9.617727	10.382273	9.658704	10.341296	10.040977	9.959023	30	60
1	15	9.617796	10.382204	9.658788	10.341212	10.040992	9.959008	45	59
2	30	9.617865	10.382135	9.658871	10.341129	10.041006	9.958994	30	58
3	45	9.617935	10.382065	9.658955	10.341045	10.041020	9.958980	15	57
4	31	9.618004	10.381996	9.659039	10.340961	10.041035	9.958965	29	56
5	15	9.618073	10.381927	9.659122	10.340878	10.041049	9.958951	45	55
6	30	9.618142	10.381858	9.659206	10.340794	10.041064	9.958936	30	54
7	45	9.618212	10.381788	9.659290	10.340710	10.041078	9.958922	15	53
8	32	9.618281	10.381719	9.659373	10.340627	10.041092	9.958908	28	52
9	15	9.618350	10.381650	9.659457	10.340543	10.041107	9.958893	45	51
10	30	9.618419	10.381581	9.659540	10.340460	10.041121	9.958879	30	50
11	45	9.618488	10.381512	9.659624	10.340376	10.041136	9.958864	15	49
12	33	9.618558	10.381442	9.659708	10.340292	10.041150	9.958850	27	48
13	15	9.618627	10.381373	9.659791	10.340209	10.041164	9.958836	45	47
14	30	9.618696	10.381304	9.659875	10.340125	10.041179	9.958821	30	46
15	45	9.618765	10.381235	9.659958	10.340042	10.041193	9.958807	15	45
16	34	9.618834	10.381166	9.660042	10.339958	10.041208	9.958792	26	44
17	15	9.618903	10.381097	9.660125	10.339875	10.041222	9.958778	45	43
18	30	9.618972	10.381028	9.660209	10.339791	10.041237	9.958763	30	42
19	45	9.619041	10.380959	9.660292	10.339708	10.041251	9.958749	15	41
20	35	9.619110	10.380890	9.660376	10.339624	10.041266	9.958734	25	40
21	15	9.619179	10.380821	9.660459	10.339541	10.041280	9.958720	45	39
22	30	9.619248	10.380752	9.660543	10.339457	10.041294	9.958706	30	38
23	45	9.619317	10.380683	9.660626	10.339374	10.041309	9.958691	15	37
24	36	9.619386	10.380614	9.660710	10.339290	10.041323	9.958677	24	36
25	15	9.619455	10.380545	9.660793	10.339207	10.041338	9.958662	45	35
26	30	9.619524	10.380476	9.660877	10.339123	10.041352	9.958648	30	34
27	45	9.619593	10.380407	9.660960	10.339040	10.041367	9.958633	15	33
28	37	9.619662	10.380338	9.661043	10.338957	10.041381	9.958619	23	32
29	15	9.619731	10.380269	9.661127	10.338873	10.041396	9.958604	45	31
30	30	9.619800	10.380200	9.661210	10.338790	10.041410	9.958590	30	30
31	45	9.619869	10.380131	9.661293	10.338707	10.041425	9.958575	15	29
32	38	9.619938	10.380062	9.661377	10.338623	10.041439	9.958561	22	28
33	15	9.620007	10.379993	9.661460	10.338540	10.041454	9.958546	45	27
34	30	9.620075	10.379925	9.661544	10.338456	10.041468	9.958532	30	26
35	45	9.620144	10.379856	9.661627	10.338373	10.041483	9.958517	15	25
36	39	9.620213	10.379787	9.661710	10.338290	10.041497	9.958503	21	24
37	15	9.620282	10.379718	9.661794	10.338206	10.041512	9.958488	45	23
38	30	9.620351	10.379649	9.661877	10.338123	10.041526	9.958474	30	22
39	45	9.620420	10.379580	9.661960	10.338040	10.041541	9.958459	15	21
40	40	9.620488	10.379512	9.662043	10.337957	10.041555	9.958445	20	20
41	15	9.620557	10.379443	9.662127	10.337873	10.041570	9.958430	45	19
42	30	9.620626	10.379374	9.662210	10.337790	10.041584	9.958416	30	18
43	45	9.620695	10.379305	9.662293	10.337707	10.041599	9.958401	15	17
44	41	9.620763	10.379237	9.662376	10.337624	10.041613	9.958387	19	16
45	15	9.620832	10.379168	9.662460	10.337540	10.041628	9.958372	45	15
46	30	9.620901	10.379099	9.662543	10.337457	10.041642	9.958358	30	14
47	45	9.620969	10.379031	9.662626	10.337374	10.041657	9.958343	15	13
48	42	9.621038	10.378962	9.662709	10.337291	10.041671	9.958329	18	12
49	15	9.621107	10.378893	9.662792	10.337208	10.041686	9.958314	45	11
50	30	9.621175	10.378825	9.662876	10.337124	10.041700	9.958300	30	10
51	45	9.621244	10.378756	9.662959	10.337041	10.041715	9.958285	15	9
52	43	9.621313	10.378687	9.663042	10.336958	10.041729	9.958271	17	8
53	15	9.621381	10.378619	9.663125	10.336875	10.041744	9.958256	45	7
54	30	9.621450	10.378550	9.663208	10.336792	10.041758	9.958242	30	6
55	45	9.621518	10.378482	9.663291	10.336709	10.041773	9.958227	15	5
56	44	9.621587	10.378413	9.663374	10.336626	10.041788	9.958212	16	4
57	15	9.621656	10.378344	9.663458	10.336542	10.041802	9.958198	45	3
58	30	9.621724	10.378276	9.663541	10.336459	10.041817	9.958183	30	2
59	45	9.621793	10.378207	9.663624	10.336376	10.041831	9.958169	15	1
60	45	9.621861	10.378139	9.663707	10.336293	10.041846	9.958154	15	0
sec.	"	cosine.	secant.	cotang. n.	tangent.	cosecant.	sine	"	sec.
4 ^h 21 ^m .		LOG. SINES, &c.						65 deg.	

1 ^h 39 ^m .		LOG. SINES, &c. (t.)						24 deg	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.621861	10.378139	9.663707	10.336293	10.041846	9.958154	15	60
1	15	9.621930	10.378070	9.663790	10.336210	10.041860	9.958140	45	59
2	30	9.621998	10.378002	9.663873	10.336127	10.041875	9.958125	30	58
3	45	9.622067	10.377933	9.663956	10.336044	10.041889	9.958111	15	57
4	46	9.622135	10.377865	9.664039	10.335961	10.041904	9.958096	14	56
5	15	9.622204	10.377796	9.664122	10.335878	10.041919	9.958081	45	55
6	30	9.622272	10.377728	9.664205	10.335795	10.041933	9.958067	30	54
7	45	9.622340	10.377660	9.664288	10.335712	10.041948	9.958052	15	53
8	47	9.622409	10.377591	9.664371	10.335629	10.041962	9.958038	13	52
9	15	9.622477	10.377523	9.664454	10.335546	10.041977	9.958023	45	51
10	30	9.622546	10.377454	9.664537	10.335463	10.041991	9.958009	30	50
11	45	9.622614	10.377386	9.664620	10.335380	10.042006	9.957994	15	49
12	48	9.622682	10.377318	9.664703	10.335297	10.042021	9.957979	12	48
13	15	9.622751	10.377249	9.664786	10.335214	10.042035	9.957965	45	47
14	30	9.622819	10.377181	9.664869	10.335131	10.042050	9.957950	30	46
15	45	9.622887	10.377113	9.664952	10.335048	10.042064	9.957936	15	45
16	49	9.622956	10.377044	9.665035	10.334965	10.042079	9.957921	11	44
17	15	9.623024	10.376976	9.665117	10.334883	10.042094	9.957906	45	43
18	30	9.623092	10.376908	9.665200	10.334800	10.042108	9.957892	30	42
19	45	9.623160	10.376840	9.665283	10.334717	10.042123	9.957877	15	41
20	50	9.623229	10.376771	9.665366	10.334634	10.042137	9.957863	10	40
21	15	9.623297	10.376703	9.665449	10.334551	10.042152	9.957848	45	39
22	30	9.623365	10.376635	9.665532	10.334468	10.042167	9.957833	30	38
23	45	9.623433	10.376567	9.665615	10.334385	10.042181	9.957819	15	37
24	51	9.623502	10.376498	9.665697	10.334303	10.042196	9.957804	9	36
25	15	9.623570	10.376430	9.665780	10.334220	10.042211	9.957789	45	35
26	30	9.623638	10.376362	9.665863	10.334137	10.042225	9.957775	30	34
27	45	9.623706	10.376294	9.665946	10.334054	10.042240	9.957760	15	33
28	52	9.623774	10.376226	9.666029	10.333971	10.042254	9.957746	8	32
29	15	9.623842	10.376158	9.666111	10.333889	10.042269	9.957731	45	31
30	30	9.623911	10.376089	9.666194	10.333806	10.042284	9.957716	30	30
31	45	9.623979	10.376021	9.666277	10.333723	10.042298	9.957702	15	29
32	53	9.624047	10.375953	9.666360	10.333640	10.042313	9.957687	7	28
33	15	9.624115	10.375885	9.666442	10.333558	10.042328	9.957672	45	27
34	30	9.624183	10.375817	9.666525	10.333475	10.042342	9.957658	30	26
35	45	9.624251	10.375749	9.666608	10.333392	10.042357	9.957643	15	25
36	54	9.624319	10.375681	9.666691	10.333309	10.042372	9.957628	6	24
37	15	9.624387	10.375613	9.666773	10.333227	10.042386	9.957614	45	23
38	30	9.624455	10.375545	9.666856	10.333144	10.042401	9.957599	30	22
39	45	9.624523	10.375477	9.666939	10.333061	10.042416	9.957584	15	21
40	55	9.624591	10.375409	9.667021	10.332979	10.042430	9.957570	5	20
41	15	9.624659	10.375341	9.667104	10.332896	10.042445	9.957555	45	19
42	30	9.624727	10.375273	9.667187	10.332813	10.042460	9.957540	30	18
43	45	9.624795	10.375205	9.667269	10.332731	10.042474	9.957526	15	17
44	56	9.624863	10.375137	9.667352	10.332648	10.042489	9.957511	4	16
45	15	9.624931	10.375069	9.667435	10.332565	10.042504	9.957496	45	15
46	30	9.624999	10.375001	9.667517	10.332483	10.042518	9.957482	30	14
47	45	9.625067	10.374933	9.667600	10.332400	10.042533	9.957467	15	13
48	57	9.625135	10.374865	9.667682	10.332318	10.042548	9.957452	3	12
49	15	9.625202	10.374798	9.667765	10.332235	10.042563	9.957437	45	11
50	30	9.625270	10.374730	9.667847	10.332153	10.042577	9.957423	30	10
51	45	9.625338	10.374662	9.667930	10.332070	10.042592	9.957408	15	9
52	58	9.625406	10.374594	9.668013	10.331987	10.042607	9.957393	2	8
53	15	9.625474	10.374526	9.668095	10.331905	10.042621	9.957379	45	7
54	30	9.625542	10.374458	9.668178	10.331822	10.042636	9.957364	30	6
55	45	9.625609	10.374391	9.668260	10.331740	10.042651	9.957349	15	5
56	59	9.625677	10.374323	9.668343	10.331657	10.042665	9.957335	1	4
57	15	9.625745	10.374255	9.668425	10.331575	10.042680	9.957320	45	3
58	30	9.625813	10.374187	9.668508	10.331492	10.042695	9.957305	30	2
59	45	9.625880	10.374120	9.668590	10.331410	10.042710	9.957290	15	1
60	60	9.625948	10.374052	9.668672	10.331328	10.042724	9.957276	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 20 ^m .		LOG. SINES, &c.						65 deg.	

1 ^h 40 ^m .		LOG. SINES, &c. (L.)						25 deg.		
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"	sec.
0	0	9.625948	10.374052	9.668672	10.331328	10.042724	9.957276	60		60
1	15	9.626016	10.373984	9.668755	10.331245	10.042739	9.957261	45		59
2	30	9.626084	10.373916	9.668837	10.331163	10.042754	9.957246	30		58
3	45	9.626151	10.373849	9.668920	10.331080	10.042769	9.957231	15		57
4	1	9.626219	10.373781	9.669002	10.330998	10.042783	9.957217	59		56
5	15	9.626287	10.373713	9.669085	10.330915	10.042798	9.957202	45		55
6	30	9.626354	10.373646	9.669167	10.330833	10.042813	9.957187	30		54
7	45	9.626422	10.373578	9.669249	10.330751	10.042827	9.957173	15		53
8	2	9.626490	10.373510	9.669332	10.330668	10.042842	9.957158	58		52
9	15	9.626557	10.373443	9.669414	10.330586	10.042857	9.957143	45		51
10	30	9.626625	10.373375	9.669497	10.330503	10.042872	9.957128	30		50
11	45	9.626692	10.373308	9.669579	10.330421	10.042887	9.957113	15		49
12	3	9.626760	10.373240	9.669661	10.330339	10.042901	9.957099	57		48
13	15	9.626828	10.373172	9.669744	10.330256	10.042916	9.957084	45		47
14	30	9.626895	10.373105	9.669826	10.330174	10.042931	9.957069	30		46
15	45	9.626963	10.373037	9.669908	10.330092	10.042946	9.957054	15		45
16	4	9.627030	10.372970	9.669991	10.330009	10.042960	9.957040	56		44
17	15	9.627098	10.372902	9.670073	10.329927	10.042975	9.957025	45		43
18	30	9.627165	10.372835	9.670155	10.329845	10.042990	9.957010	30		42
19	45	9.627233	10.372767	9.670237	10.329763	10.043005	9.956995	15		41
20	5	9.627300	10.372700	9.670320	10.329680	10.043019	9.956981	55		40
21	15	9.627368	10.372632	9.670402	10.329598	10.043034	9.956966	45		39
22	30	9.627435	10.372565	9.670484	10.329516	10.043049	9.956951	30		38
23	45	9.627503	10.372497	9.670566	10.329434	10.043064	9.956936	15		37
24	6	9.627570	10.372430	9.670649	10.329351	10.043079	9.956921	54		36
25	15	9.627637	10.372363	9.670731	10.329269	10.043093	9.956907	45		35
26	30	9.627705	10.372295	9.670813	10.329187	10.043108	9.956892	30		34
27	45	9.627772	10.372228	9.670895	10.329105	10.043123	9.956877	15		33
28	7	9.627840	10.372160	9.670977	10.329023	10.043138	9.956862	53		32
29	15	9.627907	10.372093	9.671060	10.328940	10.043153	9.956847	45		31
30	30	9.627974	10.372026	9.671142	10.328858	10.043167	9.956833	30		30
31	45	9.628042	10.371958	9.671224	10.328776	10.043182	9.956818	15		29
32	8	9.628109	10.371891	9.671306	10.328694	10.043197	9.956803	52		28
33	15	9.628176	10.371824	9.671388	10.328612	10.043212	9.956788	45		27
34	30	9.628244	10.371756	9.671470	10.328530	10.043227	9.956773	30		26
35	45	9.628311	10.371689	9.671552	10.328448	10.043242	9.956758	15		25
36	9	9.628378	10.371622	9.671634	10.328366	10.043256	9.956744	51		24
37	15	9.628445	10.371555	9.671717	10.328283	10.043271	9.956729	45		23
38	30	9.628513	10.371487	9.671799	10.328201	10.043286	9.956714	30		22
39	45	9.628580	10.371420	9.671881	10.328119	10.043301	9.956699	15		21
40	10	9.628647	10.371353	9.671963	10.328037	10.043316	9.956684	50		20
41	15	9.628714	10.371286	9.672045	10.327955	10.043331	9.956669	45		19
42	30	9.628782	10.371218	9.672127	10.327873	10.043345	9.956655	30		18
43	45	9.628849	10.371151	9.672209	10.327791	10.043360	9.956640	15		17
44	11	9.628916	10.371084	9.672291	10.327709	10.043375	9.956625	49		16
45	15	9.628983	10.371017	9.672373	10.327627	10.043390	9.956610	45		15
46	30	9.629050	10.370950	9.672455	10.327545	10.043405	9.956595	30		14
47	45	9.629117	10.370883	9.672537	10.327463	10.043420	9.956580	15		13
48	12	9.629184	10.370816	9.672619	10.327381	10.043434	9.956566	48		12
49	15	9.629252	10.370748	9.672701	10.327299	10.043449	9.956551	45		11
50	30	9.629319	10.370681	9.672783	10.327217	10.043464	9.956536	30		10
51	45	9.629386	10.370614	9.672865	10.327135	10.043479	9.956521	15		9
52	13	9.629453	10.370547	9.672947	10.327053	10.043494	9.956506	47		8
53	15	9.629520	10.370480	9.673029	10.326971	10.043509	9.956491	45		7
54	30	9.629587	10.370413	9.673111	10.326889	10.043524	9.956476	30		6
55	45	9.629654	10.370346	9.673193	10.326807	10.043539	9.956461	15		5
56	14	9.629721	10.370279	9.673274	10.326726	10.043553	9.956447	46		4
57	15	9.629788	10.370212	9.673356	10.326644	10.043568	9.956432	45		3
58	30	9.629855	10.370145	9.673438	10.326562	10.043583	9.956417	30		2
59	45	9.629922	10.370078	9.673520	10.326480	10.043598	9.956402	15		1
60	15	9.629989	10.370011	9.673602	10.326398	10.043613	9.956387	45		0
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"	sec.
4 ^h 19 ^m .		LOG. SINES, &c.						64 deg.		

1 ^h 41 ^m .		LOG. SINES, &c. (t.)						25 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.629889	10.370111	9.673602	10.326398	10.043613	9.956387	45	60
1	15	9.630056	10.369944	9.673684	10.326316	10.043628	9.956372	45	59
2	30	9.630123	10.369877	9.673766	10.326234	10.043643	9.956357	30	58
3	45	9.630190	10.369810	9.673847	10.326153	10.043658	9.956342	15	57
4	16	9.630257	10.369743	9.673929	10.326071	10.043673	9.956327	44	56
5	15	9.630324	10.369676	9.674011	10.325989	10.043688	9.956312	45	55
6	30	9.630391	10.369609	9.674093	10.325907	10.043702	9.956298	30	54
7	45	9.630457	10.369543	9.674175	10.325825	10.043717	9.956283	15	53
8	17	9.630524	10.369476	9.674257	10.325743	10.043732	9.956268	43	52
9	15	9.630591	10.369409	9.674338	10.325662	10.043747	9.956253	45	51
10	30	9.630658	10.369342	9.674420	10.325580	10.043762	9.956238	30	50
11	45	9.630725	10.369275	9.674502	10.325498	10.043777	9.956223	15	49
12	18	9.630792	10.369208	9.674584	10.325416	10.043792	9.956208	42	48
13	15	9.630858	10.369142	9.674665	10.325335	10.043807	9.956193	45	47
14	30	9.630925	10.369075	9.674747	10.325253	10.043822	9.956178	30	46
15	45	9.630992	10.369008	9.674829	10.325171	10.043837	9.956163	15	45
16	19	9.631059	10.368941	9.674910	10.325090	10.043852	9.956148	41	44
17	15	9.631126	10.368874	9.674992	10.325008	10.043867	9.956133	45	43
18	30	9.631192	10.368808	9.675074	10.324926	10.043882	9.956118	30	42
19	45	9.631259	10.368741	9.675156	10.324844	10.043897	9.956103	15	41
20	20	9.631326	10.368674	9.675237	10.324763	10.043911	9.956088	40	40
21	15	9.631392	10.368608	9.675319	10.324681	10.043926	9.956074	45	39
22	30	9.631459	10.368541	9.675401	10.324599	10.043941	9.956059	30	38
23	45	9.631526	10.368474	9.675482	10.324518	10.043956	9.956044	15	37
24	21	9.631593	10.368407	9.675564	10.324436	10.043971	9.956029	39	36
25	15	9.631659	10.368341	9.675645	10.324355	10.043986	9.956014	45	35
26	30	9.631726	10.368274	9.675727	10.324273	10.044001	9.955999	30	34
27	45	9.631792	10.368208	9.675809	10.324191	10.044016	9.955984	15	33
28	22	9.631859	10.368141	9.675890	10.324110	10.044031	9.955969	38	32
29	15	9.631926	10.368074	9.675972	10.324028	10.044046	9.955954	45	31
30	30	9.631992	10.368008	9.676053	10.323947	10.044061	9.955939	30	30
31	45	9.632059	10.367941	9.676135	10.323865	10.044076	9.955924	15	29
32	23	9.632125	10.367875	9.676216	10.323784	10.044091	9.955909	37	28
33	15	9.632192	10.367808	9.676298	10.323702	10.044106	9.955894	45	27
34	30	9.632259	10.367741	9.676380	10.323620	10.044121	9.955879	30	26
35	45	9.632325	10.367675	9.676461	10.323539	10.044136	9.955864	15	25
36	24	9.632392	10.367608	9.676543	10.323457	10.044151	9.955849	36	24
37	15	9.632458	10.367542	9.676624	10.323376	10.044166	9.955834	45	23
38	30	9.632525	10.367475	9.676706	10.323294	10.044181	9.955819	30	22
39	45	9.632591	10.367409	9.676787	10.323213	10.044196	9.955804	15	21
40	25	9.632658	10.367342	9.676869	10.323131	10.044211	9.955789	35	20
41	15	9.632724	10.367276	9.676950	10.323050	10.044226	9.955774	45	19
42	30	9.632790	10.367210	9.677031	10.322969	10.044241	9.955759	30	18
43	45	9.632857	10.367143	9.677113	10.322887	10.044256	9.955744	15	17
44	26	9.632923	10.367077	9.677194	10.322806	10.044271	9.955729	34	16
45	15	9.632990	10.367010	9.677276	10.322724	10.044286	9.955714	45	15
46	30	9.633056	10.366944	9.677357	10.322643	10.044301	9.955699	30	14
47	45	9.633122	10.366878	9.677439	10.322561	10.044316	9.955684	15	13
48	27	9.633189	10.366811	9.677520	10.322480	10.044331	9.955669	33	12
49	15	9.633255	10.366745	9.677601	10.322399	10.044346	9.955654	45	11
50	30	9.633322	10.366678	9.677683	10.322317	10.044361	9.955639	30	10
51	45	9.633388	10.366612	9.677764	10.322236	10.044376	9.955624	15	9
52	28	9.633454	10.366546	9.677846	10.322154	10.044391	9.955609	32	8
53	15	9.633520	10.366480	9.677927	10.322073	10.044406	9.955594	45	7
54	30	9.633587	10.366413	9.678008	10.321992	10.044421	9.955579	30	6
55	45	9.633653	10.366347	9.678090	10.321910	10.044437	9.955563	15	5
56	29	9.633719	10.366281	9.678171	10.321829	10.044452	9.955548	31	4
57	15	9.633786	10.366214	9.678252	10.321748	10.044467	9.955533	45	3
58	30	9.633852	10.366148	9.678333	10.321667	10.044482	9.955518	30	2
59	45	9.633918	10.366082	9.678415	10.321585	10.044497	9.955503	15	1
60	30	9.633984	10.366016	9.678496	10.321504	10.044512	9.955488	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine	"	sec.
4 ^h 18 ^m .		LOG. SINES, &c.						64 deg.	

1 ^h 48 ^m .		LOG. SINES, &c. (L.)						25 deg.	
"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.	
30	9.633984	10.366016	9.678496	10.321504	10.044512	9.955488	30	60	
15	9.634051	10.365949	9.678577	10.321423	10.044527	9.955473	45	59	
30	9.634117	10.365883	9.678659	10.321341	10.044542	9.955458	30	58	
45	9.634183	10.365817	9.678740	10.321260	10.044557	9.955443	15	57	
31	9.634249	10.365751	9.678821	10.321179	10.044572	9.955428	29	56	
15	9.634315	10.365685	9.678902	10.321098	10.044587	9.955413	45	55	
30	9.634381	10.365619	9.678984	10.321016	10.044602	9.955398	30	54	
45	9.634447	10.365553	9.679065	10.320935	10.044617	9.955383	15	53	
32	9.634514	10.365486	9.679146	10.320854	10.044632	9.955368	28	52	
15	9.634580	10.365420	9.679227	10.320773	10.044647	9.955353	45	51	
30	9.634646	10.365354	9.679308	10.320692	10.044663	9.955337	30	50	
45	9.634712	10.365288	9.679390	10.320610	10.044678	9.955322	15	49	
33	9.634778	10.365222	9.679471	10.320529	10.044693	9.955307	27	48	
15	9.634844	10.365156	9.679552	10.320448	10.044708	9.955292	45	47	
30	9.634910	10.365090	9.679633	10.320367	10.044723	9.955277	30	46	
45	9.634976	10.365024	9.679714	10.320286	10.044738	9.955262	15	45	
34	9.635042	10.364958	9.679795	10.320205	10.044753	9.955247	26	44	
15	9.635108	10.364892	9.679876	10.320124	10.044768	9.955232	45	43	
30	9.635174	10.364826	9.679958	10.320042	10.044783	9.955217	30	42	
45	9.635240	10.364760	9.680039	10.319961	10.044799	9.955201	15	41	
35	9.635306	10.364694	9.680120	10.319880	10.044814	9.955186	25	40	
15	9.635372	10.364628	9.680201	10.319799	10.044829	9.955171	45	39	
30	9.635438	10.364562	9.680282	10.319718	10.044844	9.955156	30	38	
45	9.635504	10.364496	9.680363	10.319637	10.044859	9.955141	15	37	
36	9.635570	10.364430	9.680444	10.319556	10.044874	9.955126	24	36	
15	9.635636	10.364364	9.680525	10.319475	10.044889	9.955111	45	35	
30	9.635702	10.364298	9.680606	10.319394	10.044904	9.955096	30	34	
45	9.635768	10.364232	9.680687	10.319313	10.044920	9.955080	15	33	
37	9.635833	10.364167	9.680768	10.319232	10.044935	9.955065	23	32	
15	9.635899	10.364101	9.680849	10.319151	10.044950	9.955050	45	31	
30	9.635965	10.364035	9.680930	10.319070	10.044965	9.955035	30	30	
45	9.636031	10.363969	9.681011	10.318989	10.044980	9.955020	15	29	
38	9.636097	10.363903	9.681092	10.318908	10.044995	9.955005	22	28	
15	9.636163	10.363837	9.681173	10.318827	10.045010	9.954990	45	27	
30	9.636228	10.363772	9.681254	10.318746	10.045026	9.954974	30	26	
45	9.636294	10.363706	9.681335	10.318665	10.045041	9.954959	15	25	
39	9.636360	10.363640	9.681416	10.318584	10.045056	9.954944	21	24	
15	9.636426	10.363574	9.681497	10.318503	10.045071	9.954929	45	23	
30	9.636492	10.363508	9.681578	10.318422	10.045086	9.954914	30	22	
45	9.636557	10.363443	9.681659	10.318341	10.045101	9.954899	15	21	
40	9.636623	10.363377	9.681740	10.318260	10.045117	9.954883	20	20	
15	9.636689	10.363311	9.681820	10.318180	10.045132	9.954868	45	19	
30	9.636754	10.363246	9.681901	10.318099	10.045147	9.954853	30	18	
45	9.636820	10.363180	9.681982	10.318018	10.045162	9.954838	15	17	
41	9.636886	10.363114	9.682063	10.317937	10.045177	9.954823	19	16	
15	9.636951	10.363049	9.682144	10.317856	10.045193	9.954807	45	15	
30	9.637017	10.362983	9.682225	10.317775	10.045208	9.954792	30	14	
45	9.637083	10.362917	9.682306	10.317694	10.045223	9.954777	15	13	
42	9.637148	10.362852	9.682386	10.317614	10.045238	9.954762	18	12	
15	9.637214	10.362786	9.682467	10.317533	10.045253	9.954747	45	11	
30	9.637280	10.362720	9.682548	10.317452	10.045269	9.954731	30	10	
45	9.637345	10.362655	9.682629	10.317371	10.045284	9.954716	15	9	
43	9.637411	10.362589	9.682710	10.317290	10.045299	9.954701	17	8	
15	9.637476	10.362524	9.682790	10.317210	10.045314	9.954686	45	7	
30	9.637542	10.362458	9.682871	10.317129	10.045329	9.954671	30	6	
45	9.637607	10.362393	9.682952	10.317048	10.045345	9.954655	15	5	
44	9.637673	10.362327	9.683033	10.316967	10.045360	9.954640	16	4	
15	9.637739	10.362261	9.683114	10.316886	10.045375	9.954625	45	3	
30	9.637804	10.362196	9.683194	10.316806	10.045390	9.954610	30	2	
45	9.637870	10.362130	9.683275	10.316725	10.045406	9.954594	15	1	
45	9.637935	10.362065	9.683356	10.316644	10.045421	9.954579	15	0	
"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.	
4 ^h 17 ^m .		LOG. SINES, &c.						64 deg.	

1 ^h 43 ^m .		LOG. SINES, &c. (L.)						25 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.637935	10.362065	9.683356	10.316644	10.045421	9.954579	15	60
1	15	9.638000	10.361999	9.683436	10.316564	10.045436	9.954564	45	59
2	30	9.638066	10.361934	9.683517	10.316483	10.045451	9.954549	30	58
3	45	9.638131	10.361869	9.683598	10.316402	10.045466	9.954534	15	57
4	46	9.638197	10.361803	9.683678	10.316322	10.045482	9.954518	14	56
5	15	9.638262	10.361738	9.683759	10.316241	10.045497	9.954503	45	55
6	30	9.638328	10.361672	9.683840	10.316160	10.045512	9.954488	30	54
7	45	9.638393	10.361607	9.683920	10.316080	10.045527	9.954473	15	53
8	47	9.638458	10.361542	9.684001	10.315999	10.045543	9.954457	13	52
9	15	9.638524	10.361476	9.684082	10.315918	10.045558	9.954442	45	51
10	30	9.638589	10.361411	9.684162	10.315838	10.045573	9.954427	30	50
11	45	9.638655	10.361345	9.684243	10.315757	10.045588	9.954412	15	49
12	48	9.638720	10.361280	9.684324	10.315676	10.045604	9.954396	12	48
13	15	9.638785	10.361215	9.684404	10.315596	10.045619	9.954381	45	47
14	30	9.638851	10.361149	9.684485	10.315515	10.045634	9.954366	30	46
15	45	9.638916	10.361084	9.684565	10.315435	10.045650	9.954350	15	45
16	49	9.638981	10.361019	9.684646	10.315354	10.045665	9.954335	11	44
17	15	9.639046	10.360954	9.684726	10.315274	10.045680	9.954320	45	43
18	30	9.639112	10.360888	9.684807	10.315193	10.045695	9.954305	30	42
19	45	9.639177	10.360823	9.684888	10.315112	10.045711	9.954289	15	41
20	50	9.639242	10.360758	9.684968	10.315032	10.045726	9.954274	10	40
21	15	9.639307	10.360693	9.685049	10.314951	10.045741	9.954259	45	39
22	30	9.639373	10.360627	9.685129	10.314871	10.045757	9.954243	30	38
23	45	9.639438	10.360562	9.685210	10.314790	10.045772	9.954228	15	37
24	51	9.639503	10.360497	9.685290	10.314710	10.045787	9.954213	9	36
25	15	9.639568	10.360432	9.685371	10.314629	10.045802	9.954198	45	35
26	30	9.639633	10.360367	9.685451	10.314549	10.045818	9.954182	30	34
27	45	9.639698	10.360302	9.685532	10.314468	10.045833	9.954167	15	33
28	52	9.639764	10.360236	9.685612	10.314388	10.045848	9.954152	8	32
29	15	9.639829	10.360171	9.685692	10.314308	10.045864	9.954136	45	31
30	30	9.639894	10.360106	9.685773	10.314227	10.045879	9.954121	30	30
31	45	9.639959	10.360041	9.685853	10.314147	10.045894	9.954106	15	29
32	53	9.640024	10.359976	9.685934	10.314066	10.045910	9.954090	7	28
33	15	9.640089	10.359911	9.686014	10.313986	10.045925	9.954075	45	27
34	30	9.640154	10.359846	9.686095	10.313905	10.045940	9.954060	30	26
35	45	9.640219	10.359781	9.686175	10.313825	10.045956	9.954044	15	25
36	54	9.640284	10.359716	9.686255	10.313745	10.045971	9.954029	6	24
37	15	9.640349	10.359651	9.686336	10.313664	10.045986	9.954014	45	23
38	30	9.640414	10.359586	9.686416	10.313584	10.046002	9.953998	30	22
39	45	9.640479	10.359521	9.686496	10.313504	10.046017	9.953983	15	21
40	55	9.640544	10.359456	9.686577	10.313423	10.046032	9.953968	5	20
41	15	9.640609	10.359391	9.686657	10.313343	10.046048	9.953952	45	19
42	30	9.640674	10.359326	9.686737	10.313263	10.046063	9.953937	30	18
43	45	9.640739	10.359261	9.686818	10.313182	10.046078	9.953922	15	17
44	56	9.640804	10.359196	9.686898	10.313102	10.046094	9.953906	4	16
45	15	9.640869	10.359131	9.686978	10.313022	10.046109	9.953891	45	15
46	30	9.640934	10.359066	9.687059	10.312941	10.046124	9.953876	30	14
47	45	9.640999	10.359001	9.687139	10.312861	10.046140	9.953860	15	13
48	57	9.641064	10.358936	9.687219	10.312781	10.046155	9.953845	3	12
49	15	9.641129	10.358871	9.687299	10.312701	10.046171	9.953829	45	11
50	30	9.641194	10.358806	9.687380	10.312620	10.046186	9.953814	30	10
51	45	9.641259	10.358741	9.687460	10.312540	10.046201	9.953799	15	9
52	58	9.641323	10.358677	9.687540	10.312460	10.046217	9.953783	2	8
53	15	9.641388	10.358612	9.687620	10.312380	10.046232	9.953768	45	7
54	30	9.641453	10.358547	9.687701	10.312299	10.046247	9.953753	30	6
55	45	9.641518	10.358482	9.687781	10.312219	10.046263	9.953737	15	5
56	59	9.641583	10.358417	9.687861	10.312139	10.046278	9.953722	1	4
57	15	9.641648	10.358352	9.687941	10.312059	10.046294	9.953706	45	3
58	30	9.641712	10.358288	9.688021	10.311979	10.046309	9.953691	30	2
59	45	9.641777	10.358223	9.688102	10.311898	10.046324	9.953676	15	1
60	60	9.641842	10.358158	9.688182	10.311818	10.046340	9.953660	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 16 ^m .		LOG. SINES, &c.						64 deg.	

1° 44".		LOG. SINES, &c. (t.)						26 deg.	
		sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0		9.641842	10.358158	9.688182	10.311818	10.046340	9.953680	60	60
15		9.641907	10.358093	9.688262	10.311738	10.046355	9.953645	45	59
30		9.641971	10.358029	9.688342	10.311658	10.046371	9.953629	30	58
45		9.642036	10.357964	9.688422	10.311578	10.046386	9.953614	15	57
1		9.642101	10.357899	9.688502	10.311498	10.046402	9.953598	59	56
15		9.642166	10.357834	9.688582	10.311418	10.046417	9.953583	45	55
30		9.642230	10.357770	9.688663	10.311337	10.046432	9.953568	30	54
45		9.642295	10.357705	9.688743	10.311257	10.046448	9.953552	15	53
2		9.642360	10.357640	9.688823	10.311177	10.046463	9.953537	58	52
15		9.642424	10.357576	9.688903	10.311097	10.046479	9.953521	45	51
30		9.642489	10.357511	9.688983	10.311017	10.046494	9.953506	30	50
45		9.642553	10.357447	9.689063	10.310937	10.046509	9.953491	15	49
3		9.642618	10.357382	9.689143	10.310857	10.046525	9.953475	57	48
15		9.642683	10.357317	9.689223	10.310777	10.046540	9.953460	45	47
30		9.642747	10.357253	9.689303	10.310697	10.046556	9.953444	30	46
45		9.642812	10.357188	9.689383	10.310617	10.046571	9.953429	15	45
4		9.642876	10.357124	9.689463	10.310537	10.046587	9.953413	56	44
15		9.642941	10.357059	9.689543	10.310457	10.046602	9.953398	45	43
30		9.643006	10.356994	9.689623	10.310377	10.046618	9.953382	30	42
45		9.643070	10.356930	9.689703	10.310297	10.046633	9.953367	15	41
5		9.643135	10.356865	9.689783	10.310217	10.046649	9.953351	55	40
15		9.643199	10.356801	9.689863	10.310137	10.046664	9.953336	45	39
30		9.643264	10.356736	9.689943	10.310057	10.046679	9.953321	30	38
45		9.643328	10.356672	9.690023	10.309977	10.046695	9.953306	15	37
6		9.643393	10.356607	9.690103	10.309897	10.046710	9.953290	54	36
15		9.643457	10.356543	9.690183	10.309817	10.046726	9.953274	45	35
30		9.643521	10.356479	9.690263	10.309737	10.046741	9.953259	30	34
45		9.643586	10.356414	9.690343	10.309657	10.046757	9.953243	15	33
7		9.643650	10.356350	9.690423	10.309577	10.046772	9.953228	53	32
15		9.643715	10.356285	9.690502	10.309498	10.046788	9.953212	45	31
30		9.643779	10.356221	9.690582	10.309418	10.046803	9.953197	30	30
45		9.643844	10.356156	9.690662	10.309338	10.046819	9.953181	15	29
8		9.643908	10.356092	9.690742	10.309258	10.046834	9.953166	52	28
15		9.643972	10.356028	9.690822	10.309178	10.046850	9.953150	45	27
30		9.644037	10.355963	9.690902	10.309098	10.046866	9.953135	30	26
45		9.644101	10.355899	9.690982	10.309018	10.046881	9.953119	15	25
9		9.644165	10.355835	9.691062	10.308938	10.046896	9.953104	51	24
15		9.644230	10.355770	9.691141	10.308859	10.046912	9.953088	45	23
30		9.644294	10.355706	9.691221	10.308779	10.046927	9.953073	30	22
45		9.644358	10.355642	9.691301	10.308699	10.046943	9.953057	15	21
10		9.644423	10.355577	9.691381	10.308619	10.046958	9.953042	50	20
15		9.644487	10.355513	9.691461	10.308539	10.046974	9.953026	45	19
30		9.644551	10.355449	9.691540	10.308460	10.046989	9.953011	30	18
45		9.644615	10.355385	9.691620	10.308380	10.047005	9.952995	15	17
11		9.644680	10.355320	9.691700	10.308300	10.047020	9.952980	49	16
15		9.644744	10.355256	9.691780	10.308220	10.047036	9.952964	45	15
30		9.644808	10.355192	9.691859	10.308141	10.047051	9.952949	30	14
45		9.644872	10.355128	9.691939	10.308061	10.047067	9.952933	15	13
12		9.644936	10.355064	9.692019	10.307981	10.047083	9.952917	48	12
15		9.645001	10.354999	9.692099	10.307901	10.047098	9.952902	45	11
30		9.645065	10.354935	9.692178	10.307822	10.047114	9.952886	30	10
45		9.645129	10.354871	9.692258	10.307742	10.047129	9.952871	15	9
13		9.645193	10.354807	9.692338	10.307662	10.047145	9.952855	47	8
15		9.645257	10.354743	9.692417	10.307583	10.047160	9.952840	45	7
30		9.645321	10.354679	9.692497	10.307503	10.047176	9.952824	30	6
45		9.645385	10.354615	9.692577	10.307423	10.047191	9.952809	15	5
14		9.645450	10.354550	9.692656	10.307344	10.047207	9.952793	46	4
15		9.645514	10.354486	9.692736	10.307264	10.047223	9.952777	45	3
30		9.645578	10.354422	9.692816	10.307184	10.047238	9.952762	30	2
45		9.645642	10.354358	9.692895	10.307105	10.047254	9.952746	15	1
15		9.645706	10.354294	9.692975	10.307025	10.047269	9.952731	45	0
		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4° 15".		LOG. SINES, &c.						63 deg.	

1 ^h 45 ^m .			LOG. SINES, &c. (L.)						26 deg.		
sec.	'	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	'	"	sec.
0	15		9.645706	10.354294	9.692975	10.307025	10.047269	9.952731	45		60
1		15	9.645770	10.354230	9.693055	10.306945	10.047285	9.952715	45		59
2		30	9.645834	10.354166	9.693134	10.306866	10.047300	9.952700	30		58
3		45	9.645898	10.354102	9.693214	10.306786	10.047316	9.952684	15		57
4	16		9.645962	10.354038	9.693293	10.306707	10.047332	9.952668	44		56
5		15	9.646026	10.353974	9.693373	10.306627	10.047347	9.952653	45		55
6		30	9.646090	10.353910	9.693453	10.306547	10.047363	9.952637	30		54
7		45	9.646154	10.353846	9.693532	10.306468	10.047378	9.952622	15		53
8	17		9.646218	10.353782	9.693612	10.306388	10.047394	9.952606	43		52
9		15	9.646282	10.353718	9.693691	10.306309	10.047410	9.952590	45		51
10		30	9.646346	10.353654	9.693771	10.306229	10.047425	9.952575	30		50
11		45	9.646410	10.353590	9.693850	10.306150	10.047441	9.952559	15		49
12	18		9.646473	10.353527	9.693930	10.306070	10.047456	9.952544	42		48
13		15	9.646537	10.353463	9.694009	10.305991	10.047472	9.952528	45		47
14		30	9.646601	10.353399	9.694089	10.305911	10.047488	9.952512	30		46
15		45	9.646665	10.353335	9.694168	10.305832	10.047503	9.952497	15		45
16	19		9.646729	10.353271	9.694248	10.305752	10.047519	9.952481	41		44
17		15	9.646793	10.353207	9.694327	10.305673	10.047534	9.952466	45		43
18		30	9.646857	10.353143	9.694407	10.305593	10.047550	9.952450	30		42
19		45	9.646920	10.353080	9.694486	10.305514	10.047566	9.952434	15		41
20	20		9.646984	10.353016	9.694566	10.305434	10.047581	9.952419	40		40
21		15	9.647048	10.352952	9.694645	10.305355	10.047597	9.952403	45		39
22		30	9.647112	10.352888	9.694724	10.305276	10.047613	9.952387	30		38
23		45	9.647176	10.352824	9.694804	10.305196	10.047628	9.952372	15		37
24	21		9.647239	10.352761	9.694883	10.305117	10.047644	9.952356	39		36
25		15	9.647303	10.352697	9.694963	10.305037	10.047659	9.952341	45		35
26		30	9.647367	10.352633	9.695042	10.304958	10.047675	9.952325	30		34
27		45	9.647431	10.352569	9.695121	10.304879	10.047691	9.952309	15		33
28	22		9.647494	10.352506	9.695201	10.304799	10.047706	9.952294	38		32
29		15	9.647558	10.352442	9.695280	10.304720	10.047722	9.952278	45		31
30		30	9.647622	10.352378	9.695360	10.304640	10.047738	9.952262	30		30
31		45	9.647686	10.352314	9.695439	10.304561	10.047753	9.952247	15		29
32	23		9.647749	10.352251	9.695518	10.304482	10.047769	9.952231	37		28
33		15	9.647813	10.352187	9.695598	10.304402	10.047785	9.952215	45		27
34		30	9.647877	10.352123	9.695677	10.304323	10.047800	9.952200	30		26
35		45	9.647940	10.352060	9.695756	10.304244	10.047816	9.952184	15		25
36	24		9.648004	10.351996	9.695835	10.304165	10.047832	9.952168	36		24
37		15	9.648067	10.351933	9.695915	10.304085	10.047847	9.952153	45		23
38		30	9.648131	10.351869	9.695994	10.304006	10.047863	9.952137	30		22
39		45	9.648195	10.351805	9.696073	10.303927	10.047879	9.952121	15		21
40	25		9.648258	10.351742	9.696153	10.303847	10.047895	9.952105	35		20
41		15	9.648322	10.351678	9.696232	10.303768	10.047910	9.952090	45		19
42		30	9.648385	10.351615	9.696311	10.303689	10.047926	9.952074	30		18
43		45	9.648449	10.351551	9.696390	10.303610	10.047942	9.952058	15		17
44	26		9.648512	10.351488	9.696470	10.303530	10.047957	9.952043	34		16
45		15	9.648576	10.351424	9.696549	10.303451	10.047973	9.952027	45		15
46		30	9.648639	10.351361	9.696628	10.303372	10.047989	9.952011	30		14
47		45	9.648703	10.351297	9.696707	10.303293	10.048004	9.951996	15		13
48	27		9.648766	10.351234	9.696786	10.303214	10.048020	9.951980	33		12
49		15	9.648830	10.351170	9.696866	10.303134	10.048036	9.951964	45		11
50		30	9.648893	10.351107	9.696945	10.303055	10.048052	9.951948	30		10
51		45	9.648957	10.351043	9.697024	10.302976	10.048067	9.951933	15		9
52	28		9.649020	10.350980	9.697103	10.302897	10.048083	9.951917	32		8
53		15	9.649084	10.350916	9.697182	10.302818	10.048099	9.951901	45		7
54		30	9.649147	10.350853	9.697261	10.302739	10.048114	9.951886	30		6
55		45	9.649211	10.350789	9.697341	10.302659	10.048130	9.951870	15		5
56	29		9.649274	10.350726	9.697420	10.302580	10.048146	9.951854	31		4
57		15	9.649337	10.350663	9.697499	10.302501	10.048162	9.951838	45		3
58		30	9.649401	10.350599	9.697578	10.302422	10.048177	9.951823	30		2
59		45	9.649464	10.350536	9.697657	10.302343	10.048193	9.951807	15		1
60	30		9.649527	10.350473	9.697736	10.302264	10.048209	9.951791	30		0
sec.	'	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	'	"	sec.
4 ^h 14 ^m .			LOG. SINES, &c.						63 deg.		

1° 46'		LOG. SINES, &c. (t.)					26 deg.	
	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.		sec.
30	9.649527	10.350473	9.697736	10.302264	10.048909	9.951791	30	60
15	9.649591	10.350409	9.697815	10.302185	10.048225	9.951775	45	59
30	9.649654	10.350346	9.697894	10.302106	10.048240	9.951760	30	58
45	9.649717	10.350283	9.697973	10.302027	10.048256	9.951744	15	57
31	9.649781	10.350219	9.698053	10.301947	10.048272	9.951728	29	56
15	9.649844	10.350156	9.698132	10.301868	10.048288	9.951712	45	55
30	9.649907	10.350093	9.698211	10.301789	10.048303	9.951697	30	54
45	9.649971	10.350029	9.698290	10.301710	10.048319	9.951681	15	53
32	9.650034	10.349966	9.698369	10.301631	10.048335	9.951665	28	52
15	9.650097	10.349903	9.698448	10.301552	10.048351	9.951649	45	51
30	9.650160	10.349840	9.698527	10.301473	10.048366	9.951634	30	50
45	9.650223	10.349777	9.698606	10.301394	10.048382	9.951618	15	49
33	9.650287	10.349713	9.698685	10.301315	10.048398	9.951602	27	48
15	9.650350	10.349650	9.698764	10.301236	10.048414	9.951586	45	47
30	9.650413	10.349587	9.698843	10.301157	10.048430	9.951570	30	46
45	9.650476	10.349524	9.698922	10.301078	10.048445	9.951555	15	45
34	9.650539	10.349461	9.699001	10.300999	10.048461	9.951539	26	44
15	9.650603	10.349397	9.699080	10.300920	10.048477	9.951523	45	43
30	9.650666	10.349334	9.699158	10.300842	10.048493	9.951507	30	42
45	9.650729	10.349271	9.699237	10.300763	10.048509	9.951491	15	41
35	9.650792	10.349208	9.699316	10.300684	10.048524	9.951476	25	40
15	9.650855	10.349145	9.699395	10.300605	10.048540	9.951460	45	39
30	9.650918	10.349082	9.699474	10.300526	10.048556	9.951444	30	38
45	9.650981	10.349019	9.699553	10.300447	10.048572	9.951428	15	37
36	9.651044	10.348956	9.699632	10.300368	10.048588	9.951412	24	36
15	9.651107	10.348893	9.699711	10.300289	10.048603	9.951397	45	35
30	9.651170	10.348830	9.699790	10.300210	10.048619	9.951381	30	34
45	9.651234	10.348766	9.699869	10.300131	10.048635	9.951365	15	33
37	9.651297	10.348703	9.699947	10.300053	10.048651	9.951349	23	32
15	9.651360	10.348640	9.700026	10.299974	10.048667	9.951333	45	31
30	9.651423	10.348577	9.700105	10.299895	10.048683	9.951317	30	30
45	9.651486	10.348514	9.700184	10.299816	10.048698	9.951302	15	29
38	9.651549	10.348451	9.700263	10.299737	10.048714	9.951286	22	28
15	9.651612	10.348388	9.700342	10.299658	10.048730	9.951270	45	27
30	9.651674	10.348326	9.700420	10.299580	10.048746	9.951254	30	26
45	9.651737	10.348263	9.700499	10.299501	10.048762	9.951238	15	25
39	9.651800	10.348200	9.700578	10.299422	10.048778	9.951222	21	24
15	9.651863	10.348137	9.700657	10.299343	10.048793	9.951207	45	23
30	9.651926	10.348074	9.700735	10.299265	10.048809	9.951191	30	22
45	9.651989	10.348011	9.700814	10.299186	10.048825	9.951175	15	21
40	9.652052	10.347948	9.700893	10.299107	10.048841	9.951159	20	20
15	9.652115	10.347885	9.700972	10.299028	10.048857	9.951143	45	19
30	9.652178	10.347822	9.701050	10.298950	10.048873	9.951127	30	18
45	9.652241	10.347759	9.701129	10.298871	10.048889	9.951111	15	17
41	9.652303	10.347697	9.701208	10.298792	10.048904	9.951096	19	16
15	9.652366	10.347634	9.701287	10.298713	10.048920	9.951080	45	15
30	9.652429	10.347571	9.701365	10.298635	10.048936	9.951064	30	14
45	9.652492	10.347508	9.701444	10.298556	10.048952	9.951048	15	13
42	9.652555	10.347445	9.701523	10.298477	10.048968	9.951032	18	12
15	9.652618	10.347382	9.701601	10.298399	10.048984	9.951016	45	11
30	9.652680	10.347320	9.701680	10.298320	10.049000	9.951000	30	10
45	9.652743	10.347257	9.701759	10.298241	10.049016	9.950984	15	9
43	9.652806	10.347194	9.701837	10.298163	10.049032	9.950968	17	8
15	9.652869	10.347131	9.701916	10.298084	10.049047	9.950953	45	7
30	9.652931	10.347069	9.701995	10.298005	10.049063	9.950937	30	6
45	9.652994	10.347006	9.702073	10.297927	10.049079	9.950921	15	5
44	9.653057	10.346943	9.702152	10.297848	10.049095	9.950905	16	4
15	9.653119	10.346881	9.702230	10.297770	10.049111	9.950889	45	3
30	9.653182	10.346818	9.702309	10.297691	10.049127	9.950873	30	2
45	9.653245	10.346755	9.702388	10.297612	10.049143	9.950857	15	1
45	9.653307	10.346693	9.702466	10.297534	10.049159	9.950841	15	0
	cosec.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4° 13'		LOG. SINES, &c.					63 deg.	

4 ^h 47 ^m .		LOG. SINES, &c. (t.)						26 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.653307	10.346693	9.702466	10.297534	10.049159	9.950841	15	60
1	15	9.653370	10.346630	9.702545	10.297455	10.049175	9.950825	45	69
2	30	9.653433	10.346567	9.702623	10.297377	10.049191	9.950809	30	58
3	45	9.653495	10.346505	9.702702	10.297298	10.049207	9.950793	15	57
4	46	9.653558	10.346442	9.702780	10.297220	10.049223	9.950777	14	56
5	15	9.653621	10.346379	9.702859	10.297141	10.049238	9.950762	45	55
6	30	9.653683	10.346317	9.702938	10.297062	10.049254	9.950746	30	54
7	45	9.653746	10.346254	9.703016	10.296984	10.049270	9.950730	15	53
8	47	9.653808	10.346192	9.703095	10.296905	10.049286	9.950714	13	52
9	15	9.653871	10.346129	9.703173	10.296827	10.049302	9.950698	45	51
10	30	9.653933	10.346067	9.703252	10.296748	10.049318	9.950682	30	50
11	45	9.653996	10.346004	9.703330	10.296670	10.049334	9.950666	15	49
12	48	9.654059	10.345941	9.703409	10.296591	10.049350	9.950650	12	48
13	15	9.654121	10.345879	9.703487	10.296513	10.049366	9.950634	45	47
14	30	9.654184	10.345816	9.703566	10.296434	10.049382	9.950618	30	46
15	45	9.654246	10.345754	9.703644	10.296356	10.049398	9.950602	15	45
16	49	9.654309	10.345691	9.703722	10.296278	10.049414	9.950586	11	44
17	15	9.654371	10.345629	9.703801	10.296199	10.049430	9.950570	45	43
18	30	9.654433	10.345567	9.703879	10.296121	10.049446	9.950554	30	42
19	45	9.654496	10.345504	9.703958	10.296042	10.049462	9.950538	15	41
20	50	9.654558	10.345442	9.704036	10.295964	10.049478	9.950522	10	40
21	15	9.654621	10.345379	9.704115	10.295885	10.049494	9.950506	45	39
22	30	9.654683	10.345317	9.704193	10.295807	10.049510	9.950490	30	38
23	45	9.654746	10.345254	9.704271	10.295729	10.049526	9.950474	15	37
24	51	9.654808	10.345192	9.704350	10.295650	10.049542	9.950458	9	36
25	15	9.654870	10.345130	9.704428	10.295572	10.049558	9.950442	45	35
26	30	9.654933	10.345067	9.704506	10.295494	10.049574	9.950426	30	34
27	45	9.654995	10.345005	9.704585	10.295415	10.049590	9.950410	15	33
28	52	9.655057	10.344943	9.704663	10.295337	10.049606	9.950394	8	32
29	15	9.655120	10.344880	9.704741	10.295259	10.049622	9.950378	45	31
30	30	9.655182	10.344818	9.704820	10.295180	10.049638	9.950362	30	30
31	45	9.655244	10.344756	9.704898	10.295102	10.049654	9.950346	15	29
32	53	9.655307	10.344693	9.704976	10.295024	10.049670	9.950330	7	28
33	15	9.655369	10.344631	9.705055	10.294945	10.049686	9.950314	45	27
34	30	9.655431	10.344569	9.705133	10.294867	10.049702	9.950298	30	26
35	45	9.655494	10.344506	9.705211	10.294789	10.049718	9.950282	15	25
36	54	9.655556	10.344444	9.705290	10.294710	10.049734	9.950266	6	24
37	15	9.655618	10.344382	9.705368	10.294632	10.049750	9.950250	45	23
38	30	9.655680	10.344320	9.705446	10.294554	10.049766	9.950234	30	22
39	45	9.655743	10.344257	9.705524	10.294476	10.049782	9.950218	15	21
40	55	9.655805	10.344195	9.705603	10.294397	10.049798	9.950202	5	20
41	15	9.655867	10.344133	9.705681	10.294319	10.049814	9.950186	45	19
42	30	9.655929	10.344071	9.705759	10.294241	10.049830	9.950170	30	18
43	45	9.655991	10.344009	9.705837	10.294163	10.049846	9.950154	15	17
44	56	9.656054	10.343946	9.705916	10.294084	10.049862	9.950138	4	16
45	15	9.656116	10.343884	9.705994	10.294006	10.049878	9.950122	45	15
46	30	9.656178	10.343822	9.706072	10.293928	10.049894	9.950106	30	14
47	45	9.656240	10.343760	9.706150	10.293850	10.049910	9.950090	15	13
48	57	9.656302	10.343698	9.706228	10.293772	10.049926	9.950074	3	12
49	15	9.656364	10.343636	9.706306	10.293694	10.049942	9.950058	45	11
50	30	9.656426	10.343574	9.706385	10.293615	10.049958	9.950042	30	10
51	45	9.656488	10.343512	9.706463	10.293537	10.049974	9.950026	15	9
52	58	9.656550	10.343450	9.706541	10.293459	10.049991	9.950009	2	8
53	15	9.656613	10.343387	9.706619	10.293381	10.050007	9.949993	45	7
54	30	9.656675	10.343325	9.706697	10.293303	10.050023	9.949977	30	6
55	45	9.656737	10.343263	9.706775	10.293225	10.050039	9.949961	15	5
56	59	9.656799	10.343201	9.706853	10.293147	10.050055	9.949945	1	4
57	15	9.656861	10.343139	9.706932	10.293068	10.050071	9.949929	45	3
58	30	9.656923	10.343077	9.707010	10.292990	10.050087	9.949913	30	2
59	45	9.656985	10.343015	9.707088	10.292912	10.050103	9.949897	15	1
60	(6)	9.657047	10.342953	9.707166	10.292834	10.050119	9.949881	(0)	0
sec.	"	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	"	sec.
4 ^h 12 ^m .		LOG. SINES, &c.						63 deg.	

1 49°		LOG. SINES, &c. (L.)						27 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.657047	10.342863	9.707166	10.292834	10.050119	9.949881	60	60
1	15	9.657109	10.342891	9.707244	10.292756	10.050135	9.949865	45	59
2	30	9.657171	10.342829	9.707322	10.292678	10.050151	9.949849	30	58
3	45	9.657233	10.342767	9.707400	10.292600	10.050167	9.949833	15	57
4	1	9.657295	10.342705	9.707478	10.292522	10.050184	9.949816	59	56
5	15	9.657356	10.342644	9.707556	10.292444	10.050200	9.949800	45	55
6	30	9.657418	10.342582	9.707634	10.292366	10.050216	9.949784	30	54
7	45	9.657480	10.342520	9.707712	10.292288	10.050232	9.949768	15	53
8	2	9.657542	10.342458	9.707790	10.292210	10.050248	9.949752	58	52
9	15	9.657604	10.342396	9.707868	10.292132	10.050264	9.949736	45	51
10	30	9.657666	10.342334	9.707946	10.292054	10.050280	9.949720	30	50
11	45	9.657728	10.342272	9.708024	10.291976	10.050296	9.949704	15	49
12	3	9.657790	10.342210	9.708102	10.291898	10.050312	9.949688	57	48
13	15	9.657852	10.342148	9.708180	10.291820	10.050329	9.949671	45	47
14	30	9.657913	10.342087	9.708258	10.291742	10.050345	9.949655	30	46
15	45	9.657975	10.342025	9.708336	10.291664	10.050361	9.949639	15	45
16	4	9.658037	10.341963	9.708414	10.291586	10.050377	9.949623	56	44
17	15	9.658099	10.341901	9.708492	10.291508	10.050393	9.949607	45	43
18	30	9.658161	10.341839	9.708570	10.291430	10.050409	9.949591	30	42
19	45	9.658222	10.341778	9.708648	10.291352	10.050425	9.949575	15	41
20	5	9.658284	10.341716	9.708726	10.291274	10.050442	9.949558	55	40
21	15	9.658346	10.341654	9.708804	10.291196	10.050458	9.949542	45	39
22	30	9.658408	10.341592	9.708882	10.291118	10.050474	9.949526	30	38
23	45	9.658469	10.341531	9.708959	10.291041	10.050490	9.949510	15	37
24	6	9.658531	10.341469	9.709037	10.290963	10.050506	9.949494	54	36
25	15	9.658593	10.341407	9.709115	10.290885	10.050522	9.949478	45	35
26	30	9.658655	10.341345	9.709193	10.290807	10.050539	9.949461	30	34
27	45	9.658716	10.341284	9.709271	10.290729	10.050555	9.949445	15	33
28	7	9.658778	10.341222	9.709349	10.290651	10.050571	9.949429	53	32
29	15	9.658840	10.341160	9.709427	10.290573	10.050587	9.949413	45	31
30	30	9.658901	10.341099	9.709504	10.290496	10.050603	9.949397	30	30
31	45	9.658963	10.341037	9.709582	10.290418	10.050619	9.949381	15	29
32	8	9.659025	10.340975	9.709660	10.290340	10.050636	9.949364	52	28
33	15	9.659086	10.340914	9.709738	10.290262	10.050652	9.949348	45	27
34	30	9.659148	10.340852	9.709816	10.290184	10.050668	9.949332	30	26
35	45	9.659209	10.340791	9.709893	10.290107	10.050684	9.949316	15	25
36	9	9.659271	10.340729	9.709971	10.290029	10.050700	9.949300	51	24
37	15	9.659333	10.340667	9.710049	10.289951	10.050717	9.949283	45	23
38	30	9.659394	10.340606	9.710127	10.289873	10.050733	9.949267	30	22
39	45	9.659456	10.340544	9.710205	10.289795	10.050749	9.949251	15	21
40	10	9.659517	10.340483	9.710282	10.289718	10.050765	9.949235	50	20
41	15	9.659579	10.340421	9.710360	10.289640	10.050781	9.949219	45	19
42	30	9.659640	10.340360	9.710438	10.289562	10.050798	9.949202	30	18
43	45	9.659702	10.340298	9.710516	10.289484	10.050814	9.949186	15	17
44	11	9.659763	10.340237	9.710593	10.289407	10.050830	9.949170	49	16
45	15	9.659825	10.340175	9.710671	10.289329	10.050846	9.949154	45	15
46	30	9.659886	10.340114	9.710749	10.289251	10.050862	9.949138	30	14
47	45	9.659948	10.340052	9.710826	10.289174	10.050879	9.949121	15	13
48	12	9.660009	10.339991	9.710904	10.289096	10.050895	9.949105	48	12
49	15	9.660071	10.339929	9.710982	10.289018	10.050911	9.949089	45	11
50	30	9.660132	10.339868	9.711059	10.288941	10.050927	9.949073	30	10
51	45	9.660194	10.339806	9.711137	10.288863	10.050944	9.949056	15	9
52	13	9.660255	10.339745	9.711215	10.288785	10.050960	9.949040	47	8
53	15	9.660316	10.339684	9.711292	10.288708	10.050976	9.949024	45	7
54	30	9.660378	10.339622	9.711370	10.288630	10.050992	9.949008	30	6
55	45	9.660439	10.339561	9.711448	10.288552	10.051009	9.948991	15	5
56	14	9.660500	10.339500	9.711525	10.288475	10.051025	9.948975	46	4
57	15	9.660562	10.339438	9.711603	10.288397	10.051041	9.948959	45	3
58	30	9.660623	10.339377	9.711681	10.288319	10.051057	9.948943	30	2
59	45	9.660685	10.339315	9.711758	10.288242	10.051074	9.948926	15	1
60	15	9.660746	10.339254	9.711836	10.288164	10.051090	9.948910	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4° 11'.		LOG. SINES, &c.						62 deg.	

1 st 49 ^m .		LOG. SINES, &c. (t.)						27 deg.		
sec.	°	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	°	'	sec.
0	15	9.660746	10.339254	9.711836	10.288164	10.061090	9.9488910	45		60
1	15	9.660807	10.339193	9.711913	10.288087	10.051106	9.9488894	45		59
2	30	9.660868	10.339132	9.711991	10.288009	10.051122	9.9488878	30		58
3	45	9.660930	10.339070	9.712068	10.287932	10.051139	9.9488861	15		57
4	16	9.660991	10.339009	9.712146	10.287854	10.051155	9.9488845	44		56
5	15	9.661052	10.338948	9.712224	10.287776	10.051171	9.9488829	45		55
6	30	9.661114	10.338886	9.712301	10.287699	10.051188	9.9488812	30		54
7	45	9.661175	10.338825	9.712379	10.287621	10.051204	9.9488796	15		53
8	17	9.661236	10.338764	9.712456	10.287544	10.051220	9.9488780	43		52
9	15	9.661297	10.338703	9.712534	10.287466	10.051236	9.9488764	45		51
10	30	9.661359	10.338641	9.712611	10.287389	10.051253	9.9488747	30		50
11	45	9.661420	10.338580	9.712689	10.287311	10.051269	9.9488731	15		49
12	18	9.661481	10.338519	9.712766	10.287234	10.051285	9.9488715	42		48
13	15	9.661542	10.338458	9.712844	10.287156	10.051302	9.9488698	45		47
14	30	9.661603	10.338397	9.712921	10.287079	10.051318	9.9488682	30		46
15	45	9.661664	10.338336	9.712999	10.287001	10.051334	9.9488666	15		45
16	19	9.661726	10.338274	9.713076	10.286924	10.051351	9.9488649	41		44
17	15	9.661787	10.338213	9.713154	10.286846	10.051367	9.9488633	45		43
18	30	9.661848	10.338152	9.713231	10.286769	10.051383	9.9488617	30		42
19	45	9.661909	10.338091	9.713308	10.286692	10.051399	9.9488601	15		41
20	20	9.661970	10.338030	9.713386	10.286614	10.051416	9.9488584	40		40
21	15	9.662031	10.337969	9.713463	10.286537	10.051432	9.9488568	45		39
22	30	9.662092	10.337908	9.713541	10.286459	10.051448	9.9488552	30		38
23	45	9.662153	10.337847	9.713618	10.286382	10.051465	9.9488535	15		37
24	21	9.662214	10.337786	9.713696	10.286304	10.051481	9.9488519	39		36
25	15	9.662275	10.337725	9.713773	10.286227	10.051497	9.9488503	45		35
26	30	9.662337	10.337663	9.713850	10.286150	10.051514	9.9488486	30		34
27	45	9.662398	10.337602	9.713928	10.286072	10.051530	9.9488470	15		33
28	22	9.662459	10.337541	9.714005	10.285995	10.051547	9.9488453	38		32
29	15	9.662520	10.337480	9.714082	10.285918	10.051563	9.9488437	45		31
30	30	9.662581	10.337419	9.714160	10.285840	10.051579	9.9488421	30		30
31	45	9.662642	10.337358	9.714237	10.285763	10.051596	9.9488404	15		29
32	23	9.662703	10.337297	9.714314	10.285686	10.051612	9.9488388	37		28
33	15	9.662764	10.337236	9.714392	10.285608	10.051628	9.9488372	45		27
34	30	9.662825	10.337175	9.714469	10.285531	10.051645	9.9488355	30		26
35	45	9.662886	10.337115	9.714546	10.285454	10.051661	9.9488339	15		25
36	24	9.662946	10.337054	9.714624	10.285376	10.051677	9.9488323	36		24
37	15	9.663007	10.336993	9.714701	10.285299	10.051694	9.9488306	45		23
38	30	9.663068	10.336932	9.714778	10.285222	10.051710	9.9488290	30		22
39	45	9.663129	10.336871	9.714856	10.285144	10.051727	9.9488273	15		21
40	25	9.663190	10.336810	9.714933	10.285067	10.051743	9.9488257	35		20
41	15	9.663251	10.336749	9.715010	10.284990	10.051759	9.9488241	45		19
42	30	9.663312	10.336688	9.715087	10.284913	10.051776	9.9488224	30		18
43	45	9.663373	10.336627	9.715165	10.284835	10.051792	9.9488208	15		17
44	26	9.663433	10.336567	9.715242	10.284758	10.051808	9.9488192	34		16
45	15	9.663494	10.336506	9.715319	10.284681	10.051825	9.9488175	45		15
46	30	9.663555	10.336445	9.715396	10.284604	10.051841	9.9488159	30		14
47	45	9.663616	10.336384	9.715474	10.284526	10.051858	9.9488142	15		13
48	27	9.663677	10.336323	9.715551	10.284449	10.051874	9.9488126	33		12
49	15	9.663738	10.336262	9.715628	10.284372	10.051890	9.9488110	45		11
50	30	9.663798	10.336202	9.715705	10.284295	10.051907	9.9488093	30		10
51	45	9.663859	10.336141	9.715782	10.284218	10.051923	9.9488077	15		9
52	28	9.663920	10.336080	9.715859	10.284141	10.051940	9.9488060	32		8
53	15	9.663981	10.336019	9.715937	10.284063	10.051956	9.9488044	45		7
54	30	9.664041	10.335959	9.716014	10.283986	10.051973	9.9488027	30		6
55	45	9.664102	10.335898	9.716091	10.283909	10.051989	9.9488011	15		5
56	29	9.664163	10.335837	9.716168	10.283832	10.052005	9.9479995	31		4
57	15	9.664223	10.335777	9.716245	10.283755	10.052022	9.9479978	45		3
58	30	9.664284	10.335716	9.716322	10.283678	10.052038	9.9479962	30		2
59	45	9.664345	10.335655	9.716400	10.283600	10.052055	9.9479945	15		1
60	30	9.664406	10.335594	9.716477	10.283523	10.052071	9.9479929	30		0
sec.	°	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	°	'	sec.
4 th 10 ^m .		LOG. SINES, &c.						62 deg.		

1° 50'		LOG. SINES, &c. (L.)					27 deg.	
"	'	sine.	coscant.	tangent.	cotangent.	s'cant.	cosine.	sec.
30		9.664466	10.335594	9.716477	10.283523	10.052071	9.947929	30
15		9.664466	10.335534	9.716554	10.283446	10.052088	9.947912	45
30		9.664527	10.335473	9.716631	10.283369	10.052104	9.947896	30
45		9.664588	10.335412	9.716708	10.283292	10.052120	9.947880	15
31		9.664648	10.335352	9.716785	10.283215	10.052137	9.947863	29
15		9.664709	10.335291	9.716862	10.283138	10.052153	9.947847	45
30		9.664769	10.335231	9.716939	10.283061	10.052170	9.947830	30
45		9.664830	10.335170	9.717016	10.282984	10.052186	9.947814	15
32		9.664891	10.335109	9.717093	10.282907	10.052203	9.947797	28
15		9.664951	10.335049	9.717170	10.282830	10.052219	9.947781	45
30		9.665012	10.334988	9.717247	10.282753	10.052236	9.947764	30
45		9.665072	10.334928	9.717324	10.282676	10.052252	9.947748	15
33		9.665133	10.334867	9.717401	10.282599	10.052269	9.947731	27
15		9.665193	10.334807	9.717478	10.282522	10.052285	9.947715	45
30		9.665254	10.334746	9.717555	10.282445	10.052302	9.947698	30
45		9.665314	10.334686	9.717632	10.282368	10.052318	9.947682	15
34		9.665375	10.334625	9.717709	10.282291	10.052335	9.947665	26
15		9.665435	10.334565	9.717786	10.282214	10.052351	9.947649	45
30		9.665496	10.334504	9.717863	10.282137	10.052368	9.947632	30
45		9.665556	10.334444	9.717940	10.282060	10.052384	9.947616	15
35		9.665617	10.334383	9.718017	10.281983	10.052401	9.947599	25
15		9.665677	10.334323	9.718094	10.281906	10.052417	9.947583	45
30		9.665738	10.334262	9.718171	10.281829	10.052434	9.947566	30
45		9.665798	10.334202	9.718248	10.281752	10.052450	9.947550	15
36		9.665859	10.334141	9.718325	10.281675	10.052467	9.947533	24
15		9.665919	10.334081	9.718402	10.281598	10.052483	9.947517	45
30		9.665979	10.334021	9.718479	10.281521	10.052500	9.947500	30
45		9.666040	10.333960	9.718556	10.281444	10.052516	9.947484	15
37		9.666100	10.333900	9.718633	10.281367	10.052533	9.947467	23
15		9.666160	10.333840	9.718710	10.281290	10.052549	9.947451	45
30		9.666221	10.333779	9.718786	10.281214	10.052566	9.947434	30
45		9.666281	10.333719	9.718863	10.281137	10.052582	9.947418	15
38		9.666341	10.333659	9.718940	10.281060	10.052599	9.947401	22
15		9.666402	10.333598	9.719017	10.280983	10.052615	9.947385	45
30		9.666462	10.333538	9.719094	10.280906	10.052632	9.947368	30
45		9.666522	10.333478	9.719171	10.280829	10.052648	9.947352	15
39		9.666583	10.333417	9.719248	10.280752	10.052665	9.947335	21
15		9.666643	10.333357	9.719324	10.280676	10.052681	9.947319	45
30		9.666703	10.333297	9.719401	10.280599	10.052698	9.947302	30
45		9.666764	10.333236	9.719478	10.280522	10.052715	9.947285	15
40		9.666824	10.333176	9.719555	10.280445	10.052731	9.947269	20
15		9.666884	10.333116	9.719632	10.280368	10.052748	9.947252	45
30		9.666944	10.333056	9.719708	10.280292	10.052764	9.947236	30
45		9.667004	10.332996	9.719785	10.280215	10.052781	9.947219	15
41		9.667065	10.332935	9.719862	10.280138	10.052797	9.947203	19
15		9.667125	10.332875	9.719939	10.280061	10.052814	9.947186	45
30		9.667185	10.332815	9.720015	10.279985	10.052831	9.947169	30
45		9.667245	10.332755	9.720092	10.279908	10.052847	9.947153	15
42		9.667305	10.332695	9.720169	10.279831	10.052864	9.947136	18
15		9.667366	10.332634	9.720246	10.279754	10.052880	9.947120	45
30		9.667426	10.332574	9.720322	10.279678	10.052897	9.947103	30
45		9.667486	10.332514	9.720399	10.279601	10.052913	9.947087	15
43		9.667546	10.332454	9.720476	10.279524	10.052930	9.947070	17
15		9.667606	10.332394	9.720553	10.279447	10.052947	9.947053	45
30		9.667666	10.332334	9.720629	10.279371	10.052963	9.947037	30
45		9.667726	10.332274	9.720706	10.279294	10.052980	9.947020	15
44		9.667786	10.332214	9.720783	10.279217	10.052996	9.947004	16
15		9.667846	10.332154	9.720859	10.279141	10.053013	9.946987	45
30		9.667906	10.332094	9.720936	10.279064	10.053030	9.946970	30
45		9.667966	10.332034	9.721013	10.278987	10.053046	9.946954	15
45		9.668026	10.331974	9.721089	10.278911	10.053063	9.946937	15
		cosine.	secant.	cotangent.	tangent.	coscant.	sine.	sec.

4° 9'

LOG. SINES, &c.

62 deg.

1 ^h 51 ^m .		LOG. SINES, &c. (t.)						27 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.668026	10.331974	9.721089	10.278911	10.053063	9.946937	15	60
1	15	9.668086	10.331914	9.721166	10.278834	10.053079	9.946921	45	59
2	30	9.668147	10.331853	9.721243	10.278757	10.053096	9.946904	30	58
3	45	9.668207	10.331793	9.721319	10.278681	10.053113	9.946887	15	57
4	46	9.668266	10.331734	9.721396	10.278604	10.053129	9.946871	14	56
5	15	9.668326	10.331674	9.721472	10.278528	10.053146	9.946854	45	55
6	30	9.668386	10.331614	9.721549	10.278451	10.053163	9.946837	30	54
7	45	9.668446	10.331554	9.721626	10.278374	10.053179	9.946821	15	53
8	47	9.668506	10.331494	9.721702	10.278298	10.053196	9.946804	13	52
9	15	9.668566	10.331434	9.721779	10.278221	10.053213	9.946787	45	51
10	30	9.668626	10.331374	9.721855	10.278145	10.053229	9.946771	30	50
11	45	9.668686	10.331314	9.721932	10.278068	10.053246	9.946754	15	49
12	48	9.668746	10.331254	9.722008	10.277992	10.053262	9.946738	12	48
13	15	9.668806	10.331194	9.722085	10.277915	10.053279	9.946721	45	47
14	30	9.668866	10.331134	9.722162	10.277838	10.053296	9.946704	30	46
15	45	9.668926	10.331074	9.722238	10.277762	10.053312	9.946688	15	45
16	49	9.668986	10.331014	9.722315	10.277685	10.053329	9.946671	11	44
17	15	9.669045	10.330955	9.722391	10.277609	10.053346	9.946654	45	43
18	30	9.669105	10.330895	9.722468	10.277532	10.053362	9.946638	30	42
19	45	9.669165	10.330835	9.722544	10.277456	10.053379	9.946621	15	41
20	50	9.669225	10.330775	9.722621	10.277379	10.053396	9.946604	10	40
21	15	9.669285	10.330715	9.722697	10.277303	10.053412	9.946588	45	39
22	30	9.669345	10.330655	9.722774	10.277226	10.053429	9.946571	30	38
23	45	9.669404	10.330596	9.722850	10.277150	10.053446	9.946554	15	37
24	51	9.669464	10.330536	9.722927	10.277073	10.053462	9.946538	9	36
25	15	9.669524	10.330476	9.723003	10.276997	10.053479	9.946521	45	35
26	30	9.669584	10.330416	9.723079	10.276921	10.053496	9.946504	30	34
27	45	9.669643	10.330357	9.723156	10.276844	10.053513	9.946487	15	33
28	52	9.669703	10.330297	9.723232	10.276768	10.053529	9.946471	8	32
29	15	9.669763	10.330237	9.723309	10.276691	10.053546	9.946454	45	31
30	30	9.669823	10.330177	9.723385	10.276615	10.053563	9.946437	30	30
31	45	9.669882	10.330118	9.723462	10.276538	10.053579	9.946421	15	29
32	53	9.669942	10.330058	9.723538	10.276462	10.053596	9.946404	7	28
33	15	9.670002	10.329998	9.723614	10.276386	10.053613	9.946387	45	27
34	30	9.670061	10.329939	9.723691	10.276309	10.053630	9.946370	30	26
35	45	9.670121	10.329879	9.723767	10.276233	10.053646	9.946354	15	25
36	54	9.670181	10.329819	9.723844	10.276156	10.053663	9.946337	6	24
37	15	9.670240	10.329760	9.723920	10.276080	10.053680	9.946320	45	23
38	30	9.670300	10.329700	9.723996	10.276004	10.053696	9.946304	30	22
39	45	9.670360	10.329640	9.724073	10.275927	10.053713	9.946287	15	21
40	55	9.670419	10.329581	9.724149	10.275851	10.053730	9.946270	5	20
41	15	9.670479	10.329521	9.724225	10.275775	10.053747	9.946253	45	19
42	30	9.670538	10.329462	9.724302	10.275698	10.053763	9.946237	30	18
43	45	9.670598	10.329402	9.724378	10.275622	10.053780	9.946220	15	17
44	56	9.670658	10.329342	9.724454	10.275546	10.053797	9.946203	4	16
45	15	9.670717	10.329283	9.724531	10.275469	10.053814	9.946186	45	15
46	30	9.670777	10.329223	9.724607	10.275393	10.053830	9.946170	30	14
47	45	9.670836	10.329164	9.724683	10.275317	10.053847	9.946153	15	13
48	57	9.670896	10.329104	9.724759	10.275241	10.053864	9.946136	3	12
49	15	9.670955	10.329045	9.724836	10.275164	10.053881	9.946119	45	11
50	30	9.671015	10.328985	9.724912	10.275088	10.053897	9.946103	30	10
51	45	9.671074	10.328926	9.724988	10.275012	10.053914	9.946086	15	9
52	58	9.671134	10.328866	9.725065	10.274935	10.053931	9.946069	2	8
53	15	9.671193	10.328807	9.725141	10.274859	10.053948	9.946052	45	7
54	30	9.671253	10.328747	9.725217	10.274783	10.053964	9.946036	30	6
55	45	9.671312	10.328688	9.725293	10.274707	10.053981	9.946019	15	5
56	59	9.671372	10.328628	9.725369	10.274631	10.053998	9.946002	1	4
57	15	9.671431	10.328569	9.725446	10.274554	10.054015	9.945986	45	3
58	30	9.671490	10.328510	9.725522	10.274478	10.054032	9.945968	30	2
59	45	9.671550	10.328450	9.725598	10.274402	10.054048	9.945952	15	1
60	60	9.671609	10.328391	9.725674	10.274326	10.054065	9.945935	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 8 ^m .		LOG. SINES, &c.						62 deg.	

1 ^h 52 ^m .		LOG. SINES, &c. (L.)					28 deg.		
	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.	
0	9.671600	10.328391	9.725674	10.274326	10.054065	9.945935	60	60	
15	9.671680	10.328331	9.725751	10.274249	10.054062	9.945918	45	59	
30	9.671728	10.328272	9.725827	10.274173	10.054099	9.945901	30	58	
45	9.671787	10.328213	9.725903	10.274097	10.054116	9.945884	15	57	
1	9.671847	10.328153	9.725979	10.274021	10.054132	9.945868	59	56	
15	9.671906	10.328094	9.726055	10.273945	10.054149	9.945851	45	55	
30	9.671965	10.328035	9.726131	10.273869	10.054166	9.945834	30	54	
45	9.672025	10.327975	9.726207	10.273793	10.054183	9.945817	15	53	
2	9.672084	10.327916	9.726284	10.273716	10.054200	9.945800	58	52	
15	9.672143	10.327857	9.726360	10.273640	10.054216	9.945784	45	51	
30	9.672203	10.327797	9.726436	10.273564	10.054233	9.945767	30	50	
45	9.672262	10.327738	9.726512	10.273488	10.054250	9.945750	15	49	
3	9.672321	10.327679	9.726588	10.273412	10.054267	9.945733	57	48	
15	9.672381	10.327619	9.726664	10.273336	10.054284	9.945716	45	47	
30	9.672440	10.327560	9.726740	10.273260	10.054301	9.945699	30	46	
45	9.672499	10.327501	9.726816	10.273184	10.054317	9.945683	15	45	
4	9.672558	10.327442	9.726892	10.273108	10.054334	9.945666	56	44	
15	9.672618	10.327382	9.726968	10.273032	10.054351	9.945649	45	43	
30	9.672677	10.327323	9.727045	10.272955	10.054368	9.945632	30	42	
45	9.672736	10.327264	9.727121	10.272879	10.054385	9.945615	15	41	
5	9.672795	10.327205	9.727197	10.272803	10.054402	9.945598	55	40	
15	9.672854	10.327146	9.727273	10.272727	10.054418	9.945582	45	39	
30	9.672913	10.327087	9.727349	10.272651	10.054435	9.945565	30	38	
45	9.672973	10.327027	9.727425	10.272575	10.054452	9.945548	15	37	
6	9.673032	10.326968	9.727501	10.272499	10.054469	9.945531	54	36	
15	9.673091	10.326909	9.727577	10.272423	10.054486	9.945514	45	35	
30	9.673150	10.326850	9.727653	10.272347	10.054503	9.945497	30	34	
45	9.673209	10.326791	9.727729	10.272271	10.054520	9.945480	15	33	
7	9.673268	10.326732	9.727805	10.272195	10.054536	9.945464	53	32	
15	9.673327	10.326673	9.727881	10.272119	10.054553	9.945447	45	31	
30	9.673387	10.326613	9.727957	10.272043	10.054570	9.945430	30	30	
45	9.673446	10.326554	9.728033	10.271967	10.054587	9.945413	15	29	
8	9.673505	10.326495	9.728109	10.271891	10.054604	9.945396	52	28	
15	9.673564	10.326436	9.728185	10.271815	10.054621	9.945379	45	27	
30	9.673623	10.326377	9.728261	10.271739	10.054638	9.945362	30	26	
45	9.673682	10.326318	9.728336	10.271664	10.054655	9.945345	15	25	
9	9.673741	10.326259	9.728412	10.271588	10.054672	9.945328	51	24	
15	9.673800	10.326200	9.728488	10.271512	10.054688	9.945312	45	23	
30	9.673859	10.326141	9.728564	10.271436	10.054705	9.945295	30	22	
45	9.673918	10.326082	9.728640	10.271360	10.054722	9.945278	15	21	
10	9.673977	10.326023	9.728716	10.271284	10.054739	9.945261	50	20	
15	9.674036	10.325964	9.728792	10.271208	10.054756	9.945244	45	19	
30	9.674095	10.325905	9.728868	10.271132	10.054773	9.945227	30	18	
45	9.674154	10.325846	9.728944	10.271056	10.054790	9.945210	15	17	
11	9.674213	10.325787	9.729020	10.270980	10.054807	9.945193	49	16	
15	9.674272	10.325728	9.729095	10.270905	10.054824	9.945176	45	15	
30	9.674331	10.325669	9.729171	10.270829	10.054841	9.945159	30	14	
45	9.674390	10.325610	9.729247	10.270753	10.054858	9.945142	15	13	
12	9.674448	10.325552	9.729323	10.270677	10.054875	9.945125	48	12	
15	9.674507	10.325493	9.729399	10.270601	10.054892	9.945108	45	11	
30	9.674566	10.325434	9.729475	10.270525	10.054908	9.945092	30	10	
45	9.674625	10.325375	9.729550	10.270450	10.054925	9.945075	15	9	
13	9.674684	10.325316	9.729626	10.270374	10.054942	9.945058	47	8	
15	9.674743	10.325257	9.729702	10.270298	10.054959	9.945041	45	7	
30	9.674802	10.325198	9.729778	10.270222	10.054976	9.945024	30	6	
45	9.674860	10.325140	9.729854	10.270146	10.054993	9.945007	15	5	
14	9.674919	10.325081	9.729929	10.270071	10.055010	9.944990	46	4	
15	9.674978	10.325022	9.730005	10.269995	10.055027	9.944973	45	3	
30	9.675037	10.324963	9.730081	10.269919	10.055044	9.944956	30	2	
45	9.675096	10.324904	9.730157	10.269843	10.055061	9.944939	15	1	
15	9.675155	10.324845	9.730232	10.269768	10.055078	9.944922	45	0	
	cosine	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.	
4 ^h 7 ^m .		LOG. SINES, &c.					61 deg.		

1 ^h 53 ^m .		LOG. SINES, &c. (t.)						28 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.675155	10.324845	9.730232	10.269768	10.055078	9.944922	45	60
1	15	9.675213	10.324787	9.730308	10.269692	10.055095	9.944905	45	59
2	30	9.675272	10.324728	9.730384	10.269616	10.055112	9.944888	30	58
3	45	9.675331	10.324669	9.730460	10.269540	10.055129	9.944871	15	57
4	16	9.675390	10.324610	9.730535	10.269465	10.055146	9.944854	44	56
5	15	9.675448	10.324552	9.730611	10.269389	10.055163	9.944837	45	55
6	30	9.675507	10.324493	9.730687	10.269313	10.055180	9.944820	30	54
7	45	9.675566	10.324434	9.730763	10.269237	10.055197	9.944803	15	53
8	17	9.675624	10.324376	9.730838	10.269162	10.055214	9.944786	43	52
9	15	9.675683	10.324317	9.730914	10.269086	10.055231	9.944769	45	51
10	30	9.675742	10.324258	9.730990	10.269010	10.055248	9.944752	30	50
11	45	9.675800	10.324200	9.731065	10.268935	10.055265	9.944735	15	49
12	18	9.675859	10.324141	9.731141	10.268859	10.055282	9.944718	42	48
13	15	9.675918	10.324082	9.731217	10.268783	10.055299	9.944701	45	47
14	30	9.675976	10.324024	9.731292	10.268708	10.055316	9.944684	30	46
15	45	9.676035	10.323965	9.731368	10.268632	10.055333	9.944667	15	45
16	19	9.676094	10.323906	9.731444	10.268556	10.055350	9.944650	41	44
17	15	9.676152	10.323848	9.731519	10.268481	10.055367	9.944633	45	43
18	30	9.676211	10.323789	9.731595	10.268405	10.055384	9.944616	30	42
19	45	9.676269	10.323731	9.731670	10.268330	10.055401	9.944599	15	41
20	20	9.676328	10.323672	9.731746	10.268254	10.055418	9.944582	40	40
21	15	9.676387	10.323613	9.731822	10.268178	10.055435	9.944565	45	39
22	30	9.676445	10.323555	9.731897	10.268103	10.055452	9.944548	30	38
23	45	9.676504	10.323496	9.731973	10.268027	10.055469	9.944531	15	37
24	21	9.676562	10.323438	9.732048	10.267952	10.055486	9.944514	39	36
25	15	9.676621	10.323379	9.732124	10.267876	10.055503	9.944497	45	35
26	30	9.676679	10.323321	9.732199	10.267801	10.055520	9.944480	30	34
27	45	9.676738	10.323262	9.732275	10.267725	10.055537	9.944463	15	33
28	22	9.676796	10.323204	9.732351	10.267649	10.055554	9.944446	38	32
29	15	9.676855	10.323145	9.732426	10.267574	10.055571	9.944429	45	31
30	30	9.676913	10.323087	9.732502	10.267498	10.055588	9.944412	30	30
31	45	9.676972	10.323028	9.732577	10.267423	10.055606	9.944394	15	29
32	23	9.677030	10.322970	9.732653	10.267347	10.055623	9.944377	37	28
33	15	9.677089	10.322911	9.732728	10.267272	10.055640	9.944360	45	27
34	30	9.677147	10.322853	9.732804	10.267196	10.055657	9.944343	30	26
35	45	9.677205	10.322795	9.732879	10.267121	10.055674	9.944326	15	25
36	24	9.677264	10.322736	9.732955	10.267045	10.055691	9.944309	36	24
37	15	9.677322	10.322678	9.733030	10.266970	10.055708	9.944292	45	23
38	30	9.677381	10.322619	9.733106	10.266894	10.055725	9.944275	30	22
39	45	9.677439	10.322561	9.733181	10.266819	10.055742	9.944258	15	21
40	25	9.677497	10.322503	9.733257	10.266743	10.055759	9.944241	35	20
41	15	9.677556	10.322444	9.733332	10.266668	10.055776	9.944224	45	19
42	30	9.677614	10.322386	9.733407	10.266593	10.055793	9.944207	30	18
43	45	9.677673	10.322327	9.733483	10.266517	10.055810	9.944190	15	17
44	26	9.677731	10.322269	9.733558	10.266442	10.055828	9.944172	34	16
45	15	9.677789	10.322211	9.733634	10.266366	10.055845	9.944155	45	15
46	30	9.677848	10.322152	9.733709	10.266291	10.055862	9.944138	30	14
47	45	9.677906	10.322094	9.733785	10.266215	10.055879	9.944121	15	13
48	27	9.677964	10.322036	9.733860	10.266140	10.055896	9.944104	33	12
49	15	9.678022	10.321978	9.733935	10.266065	10.055913	9.944087	45	11
50	30	9.678081	10.321919	9.734011	10.265989	10.055930	9.944070	30	10
51	45	9.678139	10.321861	9.734086	10.265914	10.055947	9.944053	15	9
52	28	9.678197	10.321803	9.734162	10.265838	10.055964	9.944036	32	8
53	15	9.678255	10.321745	9.734237	10.265763	10.055981	9.944018	45	7
54	30	9.678314	10.321686	9.734312	10.265688	10.055999	9.944001	30	6
55	45	9.678372	10.321628	9.734388	10.265612	10.056016	9.943984	15	5
56	29	9.678430	10.321570	9.734463	10.265537	10.056033	9.943967	31	4
57	15	9.678488	10.321512	9.734538	10.265462	10.056050	9.943950	45	3
58	30	9.678546	10.321454	9.734614	10.265386	10.056067	9.943933	30	2
59	45	9.678605	10.321395	9.734689	10.265311	10.056084	9.943916	15	1
60	30	9.678663	10.321337	9.734764	10.265236	10.056102	9.943898	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 6 ^m .		LOG. SINES, &c.						61 deg.	

1° 54'.		LOG. SINES, &c. (t.)					28 deg.	
	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	"	sec.
30	9.678663	10.321337	9.734764	10.265236	10.056102	9.943898	30	60
15	9.678721	10.321279	9.734840	10.265160	10.056119	9.943881	45	59
30	9.678779	10.321221	9.734915	10.265085	10.056136	9.943864	30	58
45	9.678837	10.321163	9.734990	10.265010	10.056153	9.943847	15	57
31	9.678895	10.321105	9.735066	10.264934	10.056170	9.943830	29	56
15	9.678954	10.321046	9.735141	10.264859	10.056187	9.943813	45	55
30	9.679012	10.320988	9.735216	10.264784	10.056204	9.943796	30	54
45	9.679070	10.320930	9.735291	10.264709	10.056222	9.943778	15	53
32	9.679128	10.320872	9.735367	10.264633	10.056239	9.943761	28	52
15	9.679186	10.320814	9.735442	10.264558	10.056256	9.943744	45	51
30	9.679244	10.320756	9.735517	10.264483	10.056273	9.943727	30	50
45	9.679302	10.320698	9.735592	10.264408	10.056290	9.943710	15	49
33	9.679360	10.320640	9.735668	10.264332	10.056308	9.943692	27	48
15	9.679418	10.320582	9.735743	10.264257	10.056325	9.943675	45	47
30	9.679476	10.320524	9.735818	10.264182	10.056342	9.943658	30	46
45	9.679534	10.320466	9.735893	10.264107	10.056359	9.943641	15	45
34	9.679592	10.320408	9.735968	10.264032	10.056376	9.943624	26	44
15	9.679650	10.320350	9.736044	10.263956	10.056393	9.943607	45	43
30	9.679708	10.320292	9.736119	10.263881	10.056411	9.943589	30	42
45	9.679766	10.320234	9.736194	10.263806	10.056428	9.943572	15	41
35	9.679824	10.320176	9.736269	10.263731	10.056445	9.943555	25	40
15	9.679882	10.320118	9.736344	10.263656	10.056462	9.943538	45	39
30	9.679940	10.320060	9.736420	10.263580	10.056480	9.943520	30	38
45	9.679998	10.320002	9.736495	10.263505	10.056497	9.943503	15	37
36	9.680056	10.319944	9.736570	10.263430	10.056514	9.943486	24	36
15	9.680114	10.319886	9.736645	10.263355	10.056531	9.943469	45	35
30	9.680172	10.319828	9.736720	10.263280	10.056548	9.943452	30	34
45	9.680230	10.319770	9.736795	10.263206	10.056566	9.943434	15	33
37	9.680288	10.319712	9.736870	10.263130	10.056583	9.943417	23	32
15	9.680345	10.319655	9.736946	10.263054	10.056600	9.943400	45	31
30	9.680403	10.319597	9.737021	10.262979	10.056617	9.943383	30	30
45	9.680461	10.319539	9.737096	10.262904	10.056635	9.943365	15	29
38	9.680519	10.319481	9.737171	10.262829	10.056652	9.943348	22	28
15	9.680577	10.319423	9.737246	10.262754	10.056669	9.943331	45	27
30	9.680635	10.319365	9.737321	10.262679	10.056686	9.943314	30	26
45	9.680693	10.319307	9.737396	10.262604	10.056704	9.943296	15	25
39	9.680750	10.319250	9.737471	10.262529	10.056721	9.943279	21	24
15	9.680808	10.319192	9.737546	10.262454	10.056738	9.943262	45	23
30	9.680866	10.319134	9.737621	10.262379	10.056755	9.943245	30	22
45	9.680924	10.319076	9.737696	10.262304	10.056773	9.943227	15	21
40	9.680982	10.319018	9.737771	10.262229	10.056790	9.943210	20	20
15	9.681039	10.318961	9.737846	10.262154	10.056807	9.943193	45	19
30	9.681097	10.318903	9.737921	10.262079	10.056824	9.943176	30	18
45	9.681155	10.318845	9.737996	10.262004	10.056842	9.943158	15	17
41	9.681213	10.318787	9.738071	10.261929	10.056859	9.943141	19	16
15	9.681270	10.318730	9.738146	10.261854	10.056876	9.943124	45	15
30	9.681328	10.318672	9.738221	10.261779	10.056894	9.943106	30	14
45	9.681386	10.318614	9.738296	10.261704	10.056911	9.943089	15	13
42	9.681443	10.318557	9.738371	10.261629	10.056928	9.943072	18	12
15	9.681501	10.318499	9.738446	10.261554	10.056945	9.943055	45	11
30	9.681559	10.318441	9.738521	10.261479	10.056963	9.943037	30	10
45	9.681616	10.318384	9.738596	10.261404	10.056980	9.943020	15	9
43	9.681674	10.318326	9.738671	10.261329	10.056997	9.943003	17	8
15	9.681732	10.318268	9.738746	10.261254	10.057015	9.942985	45	7
30	9.681789	10.318211	9.738821	10.261179	10.057032	9.942968	30	6
45	9.681847	10.318153	9.738896	10.261104	10.057049	9.942951	15	5
44	9.681905	10.318095	9.738971	10.261029	10.057067	9.942933	16	4
15	9.681962	10.318038	9.739046	10.260954	10.057084	9.942916	45	3
30	9.682020	10.317980	9.739121	10.260879	10.057101	9.942899	30	2
45	9.682077	10.317923	9.739196	10.260804	10.057118	9.942882	15	1
45	9.682135	10.317865	9.739271	10.260729	10.057136	9.942864	15	0
	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	"	sec.
4° 5'.		LOG. SINES, &c.					61 deg.	

1 st 55 ^m .			LOG. SINES, &c. (t.)				28 deg.				
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"	sec.	
0	45	9.682135	10.317865	9.739271	10.260729	10.057136	9.942864	15		60	
1	15	9.682192	10.317808	9.739346	10.260654	10.057153	9.942847	45		59	
2	30	9.682250	10.317750	9.739420	10.260580	10.057170	9.942830	30		58	
3	45	9.682308	10.317692	9.739495	10.260505	10.057188	9.942812	15		57	
4	46	9.682365	10.317635	9.739570	10.260430	10.057205	9.942795	14		56	
5	15	9.682423	10.317577	9.739645	10.260355	10.057222	9.942778	45		55	
6	30	9.682480	10.317520	9.739720	10.260280	10.057240	9.942760	30		54	
7	45	9.682538	10.317462	9.739795	10.260205	10.057257	9.942743	15		53	
8	47	9.682595	10.317405	9.739870	10.260130	10.057275	9.942725	13		52	
9	15	9.682653	10.317347	9.739944	10.260056	10.057292	9.942708	45		51	
10	30	9.682710	10.317290	9.740019	10.259981	10.057309	9.942691	30		50	
11	45	9.682768	10.317232	9.740094	10.259906	10.057327	9.942673	15		49	
12	48	9.682825	10.317175	9.740169	10.259831	10.057344	9.942656	12		48	
13	15	9.682882	10.317118	9.740244	10.259756	10.057361	9.942639	45		47	
14	30	9.682940	10.317060	9.740318	10.259682	10.057379	9.942621	30		46	
15	45	9.682997	10.317003	9.740393	10.259607	10.057396	9.942604	15		45	
16	49	9.683055	10.316945	9.740468	10.259532	10.057413	9.942587	11		44	
17	15	9.683112	10.316888	9.740543	10.259457	10.057431	9.942569	45		43	
18	30	9.683170	10.316830	9.740618	10.259382	10.057448	9.942552	30		42	
19	45	9.683227	10.316773	9.740692	10.259308	10.057466	9.942534	15		41	
20	50	9.683284	10.316716	9.740767	10.259233	10.057483	9.942517	10		40	
21	15	9.683342	10.316658	9.740842	10.259158	10.057500	9.942500	45		39	
22	30	9.683399	10.316601	9.740917	10.259083	10.057518	9.942482	30		38	
23	45	9.683456	10.316544	9.740991	10.259009	10.057535	9.942465	15		37	
24	51	9.683514	10.316486	9.741066	10.258934	10.057552	9.942448	9		36	
25	15	9.683571	10.316429	9.741141	10.258859	10.057570	9.942430	45		35	
26	30	9.683628	10.316372	9.741216	10.258784	10.057587	9.942413	30		34	
27	45	9.683686	10.316314	9.741290	10.258710	10.057605	9.942395	15		33	
28	52	9.683743	10.316257	9.741365	10.258635	10.057622	9.942378	8		32	
29	15	9.683800	10.316200	9.741440	10.258560	10.057640	9.942360	45		31	
30	30	9.683857	10.316143	9.741514	10.258486	10.057657	9.942343	30		30	
31	45	9.683915	10.316085	9.741589	10.258411	10.057674	9.942326	15		29	
32	53	9.683972	10.316028	9.741664	10.258336	10.057692	9.942308	7		28	
33	15	9.684029	10.315971	9.741738	10.258262	10.057709	9.942291	45		27	
34	30	9.684086	10.315914	9.741813	10.258187	10.057727	9.942273	30		26	
35	45	9.684144	10.315856	9.741888	10.258112	10.057744	9.942256	15		25	
36	54	9.684201	10.315799	9.741962	10.258038	10.057761	9.942239	6		24	
37	15	9.684258	10.315742	9.742037	10.257963	10.057779	9.942221	45		23	
38	30	9.684315	10.315685	9.742112	10.257888	10.057796	9.942204	30		22	
39	45	9.684373	10.315627	9.742186	10.257814	10.057814	9.942186	15		21	
40	55	9.684430	10.315570	9.742261	10.257739	10.057831	9.942169	5		20	
41	15	9.684487	10.315513	9.742336	10.257664	10.057849	9.942151	45		19	
42	30	9.684544	10.315456	9.742410	10.257590	10.057866	9.942134	30		18	
43	45	9.684601	10.315399	9.742485	10.257515	10.057884	9.942116	15		17	
44	56	9.684658	10.315342	9.742559	10.257441	10.057901	9.942099	4		16	
45	15	9.684715	10.315285	9.742634	10.257366	10.057919	9.942081	45		15	
46	30	9.684773	10.315227	9.742708	10.257292	10.057936	9.942064	30		14	
47	45	9.684830	10.315170	9.742783	10.257217	10.057953	9.942047	15		13	
48	57	9.684887	10.315113	9.742858	10.257142	10.057971	9.942029	3		12	
49	15	9.684944	10.315056	9.742932	10.257068	10.057988	9.942012	45		11	
50	30	9.685001	10.314999	9.743007	10.256993	10.058006	9.941994	30		10	
51	45	9.685058	10.314942	9.743081	10.256919	10.058023	9.941977	15		9	
52	58	9.685115	10.314885	9.743156	10.256844	10.058041	9.941959	2		8	
53	15	9.685172	10.314828	9.743230	10.256770	10.058058	9.941942	45		7	
54	30	9.685229	10.314771	9.743305	10.256695	10.058076	9.941924	30		6	
55	45	9.685286	10.314714	9.743379	10.256621	10.058093	9.941907	15		5	
56	59	9.685343	10.314657	9.743454	10.256546	10.058111	9.941889	1		4	
57	15	9.685400	10.314600	9.743528	10.256472	10.058128	9.941872	45		3	
58	30	9.685457	10.314543	9.743603	10.256397	10.058146	9.941854	30		2	
59	45	9.685514	10.314486	9.743677	10.256323	10.058163	9.941837	15		1	
60	60	9.685571	10.314429	9.743752	10.256248	10.058181	9.941819	0		0	
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"	sec.	
4 th 4 ^m .				LOG. SINES, &c.				61 deg.			

1 ^h 56 ^m .		LOG. SINES, &c. (t.)					29 deg.	
"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	9.685571	10.314429	9.743752	10.256248	10.058181	9.941819	60	60
15	9.685628	10.314372	9.743826	10.256174	10.058198	9.941802	45	59
30	9.685685	10.314315	9.743901	10.256099	10.058216	9.941784	30	58
45	9.685742	10.314258	9.743975	10.256025	10.058233	9.941767	15	57
1	9.685799	10.314201	9.744050	10.255950	10.058251	9.941749	59	56
15	9.685856	10.314144	9.744124	10.255876	10.058268	9.941732	45	55
30	9.685913	10.314087	9.744199	10.255801	10.058286	9.941714	30	54
45	9.685970	10.314030	9.744273	10.255727	10.058303	9.941697	15	53
2	9.686027	10.313973	9.744348	10.255652	10.058321	9.941679	58	52
15	9.686084	10.313916	9.744422	10.255578	10.058338	9.941662	45	51
30	9.686140	10.313860	9.744496	10.255504	10.058356	9.941644	30	50
45	9.686197	10.313803	9.744571	10.255429	10.058374	9.941626	15	49
3	9.686254	10.313746	9.744645	10.255355	10.058391	9.941609	57	48
15	9.686311	10.313689	9.744720	10.255280	10.058409	9.941591	45	47
30	9.686368	10.313632	9.744794	10.255206	10.058426	9.941574	30	46
45	9.686425	10.313575	9.744868	10.255132	10.058444	9.941556	15	45
4	9.686482	10.313518	9.744943	10.255057	10.058461	9.941539	56	44
15	9.686538	10.313462	9.745017	10.254983	10.058479	9.941521	45	43
30	9.686595	10.313405	9.745092	10.254908	10.058496	9.941504	30	42
45	9.686652	10.313348	9.745166	10.254834	10.058514	9.941486	15	41
5	9.686709	10.313291	9.745240	10.254760	10.058532	9.941468	55	40
15	9.686766	10.313234	9.745315	10.254685	10.058549	9.941451	45	39
30	9.686822	10.313178	9.745389	10.254611	10.058567	9.941433	30	38
45	9.686879	10.313121	9.745463	10.254537	10.058584	9.941416	15	37
6	9.686936	10.313064	9.745538	10.254462	10.058602	9.941398	54	36
15	9.686993	10.313007	9.745612	10.254388	10.058619	9.941381	45	35
30	9.687049	10.312951	9.745686	10.254314	10.058637	9.941363	30	34
45	9.687106	10.312894	9.745761	10.254239	10.058655	9.941345	15	33
7	9.687163	10.312837	9.745835	10.254165	10.058672	9.941328	53	32
15	9.687219	10.312781	9.745909	10.254091	10.058690	9.941310	45	31
30	9.687276	10.312724	9.745983	10.254017	10.058707	9.941293	30	30
45	9.687333	10.312667	9.746058	10.253942	10.058725	9.941275	15	29
8	9.687389	10.312611	9.746132	10.253868	10.058743	9.941257	52	28
15	9.687446	10.312554	9.746206	10.253794	10.058760	9.941240	45	27
30	9.687503	10.312497	9.746280	10.253720	10.058778	9.941222	30	26
45	9.687559	10.312441	9.746355	10.253645	10.058795	9.941205	15	25
9	9.687616	10.312384	9.746429	10.253571	10.058813	9.941187	51	24
15	9.687673	10.312327	9.746503	10.253497	10.058831	9.941169	45	23
30	9.687729	10.312271	9.746577	10.253423	10.058848	9.941152	30	22
45	9.687786	10.312214	9.746652	10.253348	10.058866	9.941134	15	21
10	9.687842	10.312158	9.746726	10.253274	10.058883	9.941117	50	20
15	9.687899	10.312101	9.746800	10.253200	10.058901	9.941099	45	19
30	9.687956	10.312044	9.746874	10.253126	10.058919	9.941081	30	18
45	9.688012	10.311988	9.746948	10.253052	10.058936	9.941064	15	17
11	9.688069	10.311931	9.747023	10.252977	10.058954	9.941046	49	16
15	9.688125	10.311875	9.747097	10.252903	10.058972	9.941028	45	15
30	9.688182	10.311818	9.747171	10.252829	10.058989	9.941011	30	14
45	9.688238	10.311762	9.747245	10.252755	10.059007	9.940993	15	13
12	9.688295	10.311705	9.747319	10.252681	10.059025	9.940975	48	12
15	9.688351	10.311649	9.747394	10.252606	10.059042	9.940958	45	11
30	9.688408	10.311592	9.747468	10.252532	10.059060	9.940940	30	10
45	9.688464	10.311536	9.747542	10.252458	10.059078	9.940922	15	9
13	9.688521	10.311479	9.747616	10.252384	10.059095	9.940905	47	8
15	9.688577	10.311423	9.747690	10.252310	10.059113	9.940887	45	7
30	9.688634	10.311366	9.747764	10.252236	10.059131	9.940869	30	6
45	9.688690	10.311310	9.747838	10.252162	10.059148	9.940852	15	5
14	9.688747	10.311253	9.747912	10.252088	10.059166	9.940834	46	4
15	9.688803	10.311197	9.747987	10.252013	10.059184	9.940816	45	3
30	9.688859	10.311141	9.748061	10.251939	10.059201	9.940799	30	2
45	9.688916	10.311084	9.748135	10.251865	10.059219	9.940781	15	1
15	9.688972	10.311028	9.748209	10.251791	10.059237	9.940763	45	0
"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4 ^h 3 ^m .		LOG. SINES, &c.					60 deg.	

1 ^h 57 ^m .		LOG. SINES, &c. (t.)						29 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"
0	15	9.688972	10.311028	9.748209	10.251791	10.059237	9.940763	45	
1	15	9.689029	10.310971	9.748283	10.251717	10.059254	9.940746	45	
2	30	9.689085	10.310915	9.748357	10.251643	10.059272	9.940728	30	
3	45	9.689141	10.310859	9.748431	10.251569	10.059290	9.940710	15	
4	16	9.689198	10.310802	9.748505	10.251495	10.059307	9.940693		44
5	15	9.689254	10.310746	9.748579	10.251421	10.059325	9.940675	45	
6	30	9.689310	10.310690	9.748653	10.251347	10.059343	9.940657	30	
7	45	9.689367	10.310633	9.748727	10.251273	10.059360	9.940640	15	
8	17	9.689423	10.310577	9.748801	10.251199	10.059378	9.940622		43
9	15	9.689479	10.310521	9.748875	10.251125	10.059396	9.940604	45	
10	30	9.689535	10.310464	9.748949	10.251051	10.059414	9.940586	30	
11	45	9.689592	10.310408	9.749023	10.250977	10.059431	9.940569	15	
12	18	9.689648	10.310352	9.749097	10.250903	10.059449	9.940551		42
13	15	9.689705	10.310295	9.749171	10.250829	10.059467	9.940533	45	
14	30	9.689761	10.310239	9.749245	10.250755	10.059485	9.940515	30	
15	45	9.689817	10.310183	9.749319	10.250681	10.059502	9.940498	15	
16	19	9.689873	10.310127	9.749393	10.250607	10.059520	9.940480		41
17	15	9.689930	10.310070	9.749467	10.250533	10.059538	9.940462	45	
18	30	9.689986	10.310014	9.749541	10.250459	10.059555	9.940445	30	
19	45	9.690042	10.309958	9.749615	10.250385	10.059573	9.940427	15	
20	20	9.690098	10.309902	9.749689	10.250311	10.059591	9.940409		40
21	15	9.690154	10.309846	9.749763	10.250237	10.059609	9.940391	45	
22	30	9.690211	10.309789	9.749837	10.250163	10.059626	9.940374	30	
23	45	9.690267	10.309733	9.749911	10.250089	10.059644	9.940356	15	
24	21	9.690323	10.309677	9.749985	10.250015	10.059662	9.940338		39
25	15	9.690379	10.309621	9.750059	10.249941	10.059680	9.940320	45	
26	30	9.690435	10.309565	9.750133	10.249867	10.059697	9.940303	30	
27	45	9.690491	10.309509	9.750207	10.249793	10.059715	9.940285	15	
28	22	9.690548	10.309452	9.750281	10.249719	10.059733	9.940267		38
29	15	9.690604	10.309396	9.750354	10.249646	10.059751	9.940249	45	
30	30	9.690660	10.309340	9.750428	10.249572	10.059769	9.940231	30	
31	45	9.690716	10.309284	9.750502	10.249498	10.059786	9.940214	15	
32	23	9.690772	10.309228	9.750576	10.249424	10.059804	9.940196		37
33	15	9.690828	10.309172	9.750650	10.249350	10.059822	9.940178	45	
34	30	9.690884	10.309116	9.750724	10.249276	10.059840	9.940160	30	
35	45	9.690940	10.309060	9.750798	10.249202	10.059858	9.940142	15	
36	24	9.690996	10.309004	9.750872	10.249128	10.059875	9.940125		36
37	15	9.691052	10.308948	9.750945	10.249055	10.059893	9.940107	45	
38	30	9.691108	10.308892	9.751019	10.248981	10.059911	9.940089	30	
39	45	9.691164	10.308836	9.751093	10.248907	10.059929	9.940071	15	
40	25	9.691220	10.308780	9.751167	10.248833	10.059947	9.940053		35
41	15	9.691276	10.308724	9.751241	10.248759	10.059964	9.940036	45	
42	30	9.691332	10.308668	9.751315	10.248685	10.059982	9.940018	30	
43	45	9.691388	10.308612	9.751388	10.248612	10.060000	9.940000	15	
44	26	9.691444	10.308556	9.751462	10.248538	10.060018	9.939982		34
45	15	9.691500	10.308500	9.751536	10.248464	10.060036	9.939964	45	
46	30	9.691556	10.308444	9.751610	10.248390	10.060053	9.939947	30	
47	45	9.691612	10.308388	9.751683	10.248317	10.060071	9.939929	15	
48	27	9.691668	10.308332	9.751757	10.248243	10.060089	9.939911		33
49	15	9.691724	10.308276	9.751831	10.248169	10.060107	9.939893	45	
50	30	9.691780	10.308220	9.751905	10.248095	10.060125	9.939875	30	
51	45	9.691836	10.308164	9.751979	10.248021	10.060143	9.939857	15	
52	28	9.691892	10.308108	9.752052	10.247948	10.060160	9.939840		32
53	15	9.691948	10.308052	9.752126	10.247874	10.060178	9.939822	45	
54	30	9.692004	10.307996	9.752200	10.247800	10.060196	9.939804	30	
55	45	9.692060	10.307940	9.752273	10.247727	10.060214	9.939786	15	
56	29	9.692115	10.307885	9.752347	10.247653	10.060232	9.939768		31
57	15	9.692171	10.307829	9.752421	10.247579	10.060250	9.939750	45	
58	30	9.692227	10.307773	9.752495	10.247505	10.060268	9.939732	30	
59	45	9.692283	10.307717	9.752568	10.247432	10.060285	9.939715	15	
60	30	9.692339	10.307661	9.752642	10.247358	10.060303	9.939697		30
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"
4 ^h 2 ^m .		LOG. SINES, &c.						60 deg	

1 ^h 58 ^m .			LOG. SINES, &c. (t.)						29 deg.		
sec.	'	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	'	"	sec.
0	30		9.692339	10.307661	9.752642	10.247358	10.060303	9.939697	30		60
1		15	9.692395	10.307605	9.752716	10.247284	10.060321	9.939679	45		59
2		30	9.692450	10.307550	9.752789	10.247211	10.060339	9.939661	30		58
3		45	9.692506	10.307494	9.752863	10.247137	10.060357	9.939643	15		57
4	31		9.692562	10.307438	9.752937	10.247063	10.060375	9.939625	29		56
5		15	9.692618	10.307382	9.753010	10.246990	10.060393	9.939607	45		55
6		30	9.692674	10.307326	9.753084	10.246916	10.060411	9.939589	30		54
7		45	9.692729	10.307271	9.753158	10.246842	10.060428	9.939572	15		53
8	32		9.692785	10.307215	9.753231	10.246769	10.060446	9.939554	28		52
9		15	9.692841	10.307159	9.753305	10.246695	10.060464	9.939536	45		51
10		30	9.692897	10.307103	9.753379	10.246621	10.060482	9.939518	30		50
11		45	9.692952	10.307048	9.753452	10.246548	10.060500	9.939500	15		49
12	33		9.693008	10.306992	9.753526	10.246474	10.060518	9.939482	27		48
13		15	9.693064	10.306936	9.753599	10.246401	10.060536	9.939464	45		47
14		30	9.693119	10.306881	9.753673	10.246327	10.060554	9.939446	30		46
15		45	9.693175	10.306825	9.753747	10.246253	10.060572	9.939428	15		45
16	34		9.693231	10.306769	9.753820	10.246180	10.060590	9.939410	26		44
17		15	9.693286	10.306714	9.753894	10.246106	10.060607	9.939393	45		43
18		30	9.693342	10.306658	9.753967	10.246033	10.060625	9.939375	30		42
19		45	9.693398	10.306602	9.754041	10.245959	10.060643	9.939357	15		41
20	35		9.693453	10.306547	9.754115	10.245885	10.060661	9.939339	25		40
21		15	9.693509	10.306491	9.754188	10.245812	10.060679	9.939321	45		39
22		30	9.693565	10.306435	9.754262	10.245738	10.060697	9.939303	30		38
23		45	9.693620	10.306380	9.754335	10.245665	10.060715	9.939285	15		37
24	36		9.693676	10.306324	9.754409	10.245591	10.060733	9.939267	24		36
25		15	9.693731	10.306269	9.754482	10.245518	10.060751	9.939249	45		35
26		30	9.693787	10.306213	9.754556	10.245444	10.060769	9.939231	30		34
27		45	9.693843	10.306157	9.754629	10.245371	10.060787	9.939213	15		33
28	37		9.693898	10.306102	9.754703	10.245297	10.060805	9.939195	23		32
29		15	9.693954	10.306046	9.754776	10.245224	10.060823	9.939177	45		31
30		30	9.694009	10.305991	9.754850	10.245150	10.060841	9.939159	30		30
31		45	9.694065	10.305935	9.754923	10.245077	10.060859	9.939141	15		29
32	38		9.694120	10.305880	9.754997	10.245003	10.060877	9.939123	22		28
33		15	9.694176	10.305824	9.755070	10.244930	10.060895	9.939105	45		27
34		30	9.694231	10.305769	9.755144	10.244856	10.060913	9.939087	30		26
35		45	9.694287	10.305713	9.755217	10.244783	10.060931	9.939069	15		25
36	39		9.694342	10.305658	9.755291	10.244709	10.060949	9.939051	21		24
37		15	9.694398	10.305602	9.755364	10.244636	10.060966	9.939034	45		23
38		30	9.694453	10.305547	9.755438	10.244562	10.060984	9.939016	30		22
39		45	9.694509	10.305491	9.755511	10.244489	10.061002	9.938998	15		21
40	40		9.694564	10.305436	9.755585	10.244415	10.061020	9.938980	20		20
41		15	9.694620	10.305380	9.755658	10.244342	10.061038	9.938962	45		19
42		30	9.694675	10.305325	9.755731	10.244269	10.061056	9.938944	30		18
43		45	9.694730	10.305270	9.755805	10.244195	10.061074	9.938926	15		17
44	41		9.694786	10.305214	9.755878	10.244122	10.061092	9.938908	19		16
45		15	9.694841	10.305159	9.755952	10.244048	10.061110	9.938890	45		15
46		30	9.694897	10.305103	9.756025	10.243975	10.061128	9.938872	30		14
47		45	9.694952	10.305048	9.756098	10.243902	10.061146	9.938854	15		13
48	42		9.695007	10.304993	9.756172	10.243828	10.061164	9.938836	18		12
49		15	9.695063	10.304937	9.756245	10.243755	10.061182	9.938818	45		11
50		30	9.695118	10.304882	9.756319	10.243681	10.061201	9.938799	30		10
51		45	9.695173	10.304827	9.756392	10.243608	10.061219	9.938781	15		9
52	43		9.695229	10.304771	9.756465	10.243535	10.061237	9.938763	17		8
53		15	9.695284	10.304716	9.756539	10.243461	10.061255	9.938745	45		7
54		30	9.695339	10.304661	9.756612	10.243388	10.061273	9.938727	30		6
55		45	9.695395	10.304605	9.756685	10.243315	10.061291	9.938709	15		5
56	44		9.695450	10.304550	9.756759	10.243241	10.061309	9.938691	16		4
57		15	9.695505	10.304495	9.756832	10.243168	10.061327	9.938673	45		3
58		30	9.695561	10.304439	9.756905	10.243095	10.061345	9.938655	30		2
59		45	9.695616	10.304384	9.756979	10.243021	10.061363	9.938637	15		1
60	45		9.695671	10.304329	9.757052	10.242948	10.061381	9.938619	15		0
sec.	'	"	cosec.	secant.	cotangent.	tangent.	cosecant.	sine.	'	"	sec.
4 ^h 1 ^m .			LOG. SINES, &c.						60 deg.		

1° 59m.		LOG. SINES, &c. (t.)						29 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.695671	10.304329	9.757052	10.242948	10.061381	9.938619	15	60
1	15	9.695726	10.304274	9.757125	10.242875	10.061399	9.938601	45	59
2	30	9.695782	10.304218	9.757199	10.242801	10.061417	9.938583	30	58
3	45	9.695837	10.304163	9.757272	10.242728	10.061435	9.938565	15	57
4	46	9.695892	10.304108	9.757345	10.242655	10.061453	9.938547	14	56
5	15	9.695947	10.304053	9.757418	10.242582	10.061471	9.938529	45	55
6	30	9.696003	10.303997	9.757492	10.242508	10.061489	9.938511	30	54
7	45	9.696058	10.303942	9.757565	10.242435	10.061507	9.938493	15	53
8	47	9.696113	10.303887	9.757638	10.242362	10.061525	9.938475	13	52
9	15	9.696168	10.303832	9.757711	10.242289	10.061543	9.938457	45	51
10	30	9.696223	10.303777	9.757785	10.242215	10.061562	9.938438	30	50
11	45	9.696278	10.303722	9.757858	10.242142	10.061580	9.938420	15	49
12	48	9.696334	10.303666	9.757931	10.242069	10.061598	9.938402	12	48
13	15	9.696389	10.303611	9.758004	10.241996	10.061616	9.938384	45	47
14	30	9.696444	10.303556	9.758078	10.241922	10.061634	9.938366	30	46
15	45	9.696499	10.303501	9.758151	10.241849	10.061652	9.938348	15	45
16	49	9.696554	10.303446	9.758224	10.241776	10.061670	9.938330	11	44
17	15	9.696609	10.303391	9.758297	10.241703	10.061688	9.938312	45	43
18	30	9.696664	10.303336	9.758371	10.241629	10.061706	9.938294	30	42
19	45	9.696719	10.303281	9.758444	10.241556	10.061724	9.938276	15	41
20	50	9.696774	10.303226	9.758517	10.241483	10.061742	9.938258	10	40
21	15	9.696830	10.303170	9.758590	10.241410	10.061761	9.938239	45	39
22	30	9.696885	10.303115	9.758663	10.241337	10.061779	9.938221	30	38
23	45	9.696940	10.303060	9.758736	10.241264	10.061797	9.938203	15	37
24	51	9.696995	10.303005	9.758810	10.241190	10.061815	9.938185	9	36
25	15	9.697050	10.302950	9.758883	10.241117	10.061833	9.938167	45	35
26	30	9.697105	10.302895	9.758956	10.241044	10.061851	9.938149	30	34
27	45	9.697160	10.302840	9.759029	10.240971	10.061869	9.938131	15	33
28	52	9.697215	10.302785	9.759102	10.240898	10.061887	9.938113	8	32
29	15	9.697270	10.302730	9.759175	10.240825	10.061906	9.938094	45	31
30	30	9.697325	10.302675	9.759248	10.240752	10.061924	9.938076	30	30
31	45	9.697380	10.302620	9.759322	10.240678	10.061942	9.938058	15	29
32	53	9.697435	10.302565	9.759395	10.240605	10.061960	9.938040	7	28
33	15	9.697490	10.302510	9.759468	10.240532	10.061978	9.938022	45	27
34	30	9.697545	10.302455	9.759541	10.240459	10.061996	9.938004	30	26
35	45	9.697600	10.302400	9.759614	10.240386	10.062015	9.937985	15	25
36	54	9.697654	10.302346	9.759687	10.240313	10.062033	9.937967	6	24
37	15	9.697709	10.302291	9.759760	10.240240	10.062051	9.937949	45	23
38	30	9.697764	10.302236	9.759833	10.240167	10.062069	9.937931	30	22
39	45	9.697819	10.302181	9.759906	10.240094	10.062087	9.937913	15	21
40	55	9.697874	10.302126	9.759979	10.240021	10.062105	9.937895	5	20
41	15	9.697929	10.302071	9.760052	10.239948	10.062124	9.937876	45	19
42	30	9.697984	10.302016	9.760125	10.239875	10.062142	9.937858	30	18
43	45	9.698039	10.301961	9.760199	10.239801	10.062160	9.937840	15	17
44	56	9.698094	10.301906	9.760272	10.239728	10.062178	9.937822	4	16
45	15	9.698148	10.301852	9.760345	10.239655	10.062196	9.937804	45	15
46	30	9.698203	10.301797	9.760418	10.239582	10.062214	9.937786	30	14
47	45	9.698258	10.301742	9.760491	10.239509	10.062233	9.937767	15	13
48	57	9.698313	10.301687	9.760564	10.239436	10.062251	9.937749	3	12
49	15	9.698368	10.301632	9.760637	10.239363	10.062269	9.937731	45	11
50	30	9.698422	10.301578	9.760710	10.239290	10.062287	9.937713	30	10
51	45	9.698477	10.301523	9.760783	10.239217	10.062305	9.937695	15	9
52	58	9.698532	10.301468	9.760856	10.239144	10.062324	9.937676	2	8
53	15	9.698587	10.301413	9.760929	10.239071	10.062342	9.937658	45	7
54	30	9.698642	10.301358	9.761002	10.238998	10.062360	9.937640	30	6
55	45	9.698696	10.301304	9.761075	10.238925	10.062378	9.937622	15	5
56	59	9.698751	10.301249	9.761148	10.238852	10.062397	9.937603	1	4
57	15	9.698806	10.301194	9.761220	10.238780	10.062415	9.937585	45	3
58	30	9.698861	10.301139	9.761293	10.238707	10.062433	9.937567	30	2
59	45	9.698915	10.301085	9.761366	10.238634	10.062451	9.937549	15	1
60	60	9.698970	10.301030	9.761439	10.238561	10.062469	9.937531	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
4° 0m.		LOG. SINES, &c.						60 deg.	

2 ^d 0 ^m .		LOG. SINES, &c. (t.)						30 deg.	
		sine.	cosecant.	tangent.	cotangent.	secant.	covine.		sec.
0	0	9.688970	10.301030	9.761439	10.238561	10.062469	9.937531	60	60
	15	9.689025	10.300975	9.761512	10.238488	10.062488	9.937512	45	59
	30	9.689079	10.300921	9.761585	10.238415	10.062506	9.937494	30	58
	45	9.689134	10.300866	9.761658	10.238342	10.062524	9.937476	15	57
1	0	9.689189	10.300811	9.761731	10.238269	10.062542	9.937458	59	56
	15	9.689243	10.300757	9.761804	10.238196	10.062561	9.937439	45	55
	30	9.689298	10.300702	9.761877	10.238123	10.062579	9.937421	30	54
	45	9.689353	10.300647	9.761950	10.238050	10.062597	9.937403	15	53
2	0	9.689407	10.300593	9.762023	10.237977	10.062615	9.937385	58	52
	15	9.689462	10.300538	9.762096	10.237904	10.062634	9.937366	45	51
	30	9.689517	10.300483	9.762168	10.237832	10.062652	9.937348	30	50
	45	9.689571	10.300429	9.762241	10.237759	10.062670	9.937330	15	49
3	0	9.689626	10.300374	9.762314	10.237686	10.062688	9.937312	57	48
	15	9.689680	10.300320	9.762387	10.237613	10.062707	9.937293	45	47
	30	9.689735	10.300265	9.762460	10.237540	10.062725	9.937275	30	46
	45	9.689789	10.300211	9.762533	10.237467	10.062743	9.937257	15	45
4	0	9.689844	10.300156	9.762606	10.237394	10.062762	9.937238	56	44
	15	9.689899	10.300101	9.762678	10.237322	10.062780	9.937220	45	43
	30	9.689953	10.300047	9.762751	10.237249	10.062798	9.937202	30	42
	45	9.700008	10.299992	9.762824	10.237176	10.062816	9.937184	15	41
5	0	9.700062	10.299938	9.762897	10.237103	10.062835	9.937165	55	40
	15	9.700117	10.299883	9.762970	10.237030	10.062853	9.937147	45	39
	30	9.700171	10.299829	9.763042	10.236958	10.062871	9.937129	30	38
	45	9.700226	10.299774	9.763115	10.236885	10.062890	9.937110	15	37
6	0	9.700280	10.299720	9.763188	10.236812	10.062908	9.937092	54	36
	15	9.700335	10.299665	9.763261	10.236739	10.062926	9.937074	45	35
	30	9.700389	10.299611	9.763334	10.236666	10.062945	9.937055	30	34
	45	9.700444	10.299556	9.763406	10.236594	10.062963	9.937037	15	33
7	0	9.700498	10.299502	9.763479	10.236521	10.062981	9.937019	53	32
	15	9.700552	10.299448	9.763552	10.236448	10.063000	9.937000	45	31
	30	9.700607	10.299393	9.763625	10.236375	10.063018	9.936982	30	30
	45	9.700661	10.299339	9.763697	10.236303	10.063036	9.936964	15	29
8	0	9.700716	10.299284	9.763770	10.236230	10.063054	9.936946	52	28
	15	9.700770	10.299230	9.763843	10.236157	10.063073	9.936927	45	27
	30	9.700825	10.299175	9.763916	10.236084	10.063091	9.936909	30	26
	45	9.700879	10.299121	9.763988	10.236012	10.063109	9.936891	15	25
9	0	9.700933	10.299067	9.764061	10.235939	10.063128	9.936872	51	24
	15	9.700988	10.299012	9.764134	10.235866	10.063146	9.936854	45	23
	30	9.701042	10.298958	9.764207	10.235793	10.063165	9.936835	30	22
	45	9.701096	10.298904	9.764279	10.235721	10.063183	9.936817	15	21
10	0	9.701151	10.298849	9.764352	10.235648	10.063201	9.936799	50	20
	15	9.701205	10.298795	9.764425	10.235575	10.063220	9.936780	45	19
	30	9.701259	10.298741	9.764497	10.235503	10.063238	9.936762	30	18
	45	9.701314	10.298686	9.764570	10.235430	10.063256	9.936744	15	17
11	0	9.701368	10.298632	9.764643	10.235357	10.063275	9.936725	49	16
	15	9.701422	10.298578	9.764715	10.235285	10.063293	9.936707	45	15
	30	9.701477	10.298523	9.764788	10.235212	10.063311	9.936689	30	14
	45	9.701531	10.298469	9.764861	10.235139	10.063330	9.936670	15	13
12	0	9.701585	10.298415	9.764933	10.235067	10.063348	9.936652	48	12
	15	9.701639	10.298361	9.765006	10.234994	10.063367	9.936633	45	11
	30	9.701694	10.298306	9.765079	10.234921	10.063385	9.936615	30	10
	45	9.701748	10.298252	9.765151	10.234849	10.063403	9.936597	15	9
13	0	9.701802	10.298198	9.765224	10.234776	10.063422	9.936578	47	8
	15	9.701856	10.298144	9.765296	10.234704	10.063440	9.936560	45	7
	30	9.701911	10.298089	9.765369	10.234631	10.063459	9.936541	30	6
	45	9.701965	10.298035	9.765442	10.234558	10.063477	9.936523	15	5
14	0	9.702019	10.297981	9.765514	10.234486	10.063495	9.936505	46	4
	15	9.702073	10.297927	9.765587	10.234413	10.063514	9.936486	45	3
	30	9.702127	10.297873	9.765659	10.234341	10.063532	9.936468	30	2
	45	9.702182	10.297818	9.765732	10.234268	10.063551	9.936449	15	1
15	0	9.702236	10.297764	9.765805	10.234195	10.063569	9.936431	45	0
		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
3 ^d 59 ^m .		LOG. SINES, &c.						59 deg.	

2 ^d 1 ^m		LOG. SINES, &c. (L.)						80 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	"	sec.
9	15	9.702236	10.297764	9.765895	10.234195	10.063569	9.936431	45	60
1	15	9.702290	10.297710	9.765877	10.234123	10.063587	9.936413	45	59
2	30	9.702344	10.297656	9.765850	10.234050	10.063606	9.936394	30	58
3	45	9.702398	10.297602	9.765822	10.233978	9.063624	9.936376	15	57
4	16	9.702452	10.297548	9.766095	10.233905	10.063643	9.936357	44	56
5	15	9.702506	10.297494	9.766167	10.233833	10.063661	9.936339	45	55
6	30	9.702560	10.297440	9.766240	10.233760	10.063680	9.936320	30	54
7	45	9.702615	10.297385	9.766313	10.233687	10.063698	9.936302	15	53
8	17	9.702669	10.297331	9.766385	10.233615	10.063716	9.936284	43	52
9	15	9.702723	10.297277	9.766458	10.233542	10.063735	9.936265	45	51
10	30	9.702777	10.297223	9.766530	10.233470	10.063753	9.936247	30	50
11	45	9.702831	10.297169	9.766603	10.233397	10.063772	9.936228	15	49
12	18	9.702885	10.297115	9.766675	10.233325	10.063790	9.936210	42	48
13	15	9.702939	10.297061	9.766748	10.233252	10.063809	9.936191	45	47
14	30	9.702993	10.297007	9.766820	10.233180	10.063827	9.936173	30	46
15	45	9.703047	10.296953	9.766893	10.233107	10.063846	9.936154	15	45
16	19	9.703101	10.296899	9.766965	10.233035	10.063864	9.936136	41	44
17	15	9.703155	10.296845	9.767038	10.232962	10.063883	9.936117	45	43
18	30	9.703209	10.296791	9.767110	10.232890	10.063901	9.936099	30	42
19	45	9.703263	10.296737	9.767182	10.232818	10.063920	9.936080	15	41
20	20	9.703317	10.296683	9.767255	10.232745	10.063938	9.936062	40	40
21	15	9.703371	10.296629	9.767327	10.232673	10.063956	9.936044	45	39
22	30	9.703425	10.296575	9.767400	10.232600	10.063975	9.936025	30	38
23	45	9.703479	10.296521	9.767472	10.232528	10.063993	9.936007	15	37
24	21	9.703533	10.296467	9.767545	10.232455	10.064012	9.935988	39	36
25	15	9.703587	10.296413	9.767617	10.232383	10.064030	9.935970	45	35
26	30	9.703641	10.296359	9.767690	10.232310	10.064049	9.935951	30	34
27	45	9.703695	10.296305	9.767762	10.232238	10.064067	9.935933	15	33
28	22	9.703749	10.296251	9.767834	10.232166	10.064086	9.935914	38	32
29	15	9.703802	10.296198	9.767907	10.232093	10.064104	9.935896	45	31
30	30	9.703856	10.296144	9.767979	10.232021	10.064123	9.935877	30	30
31	45	9.703910	10.296090	9.768052	10.231948	10.064141	9.935859	15	29
32	23	9.703964	10.296036	9.768124	10.231876	10.064160	9.935840	37	28
33	15	9.704018	10.295982	9.768196	10.231804	10.064178	9.935822	45	27
34	30	9.704072	10.295928	9.768269	10.231731	10.064197	9.935803	30	26
35	45	9.704126	10.295874	9.768341	10.231659	10.064216	9.935784	15	25
36	24	9.704179	10.295821	9.768413	10.231587	10.064234	9.935766	36	24
37	15	9.704233	10.295767	9.768486	10.231514	10.064253	9.935747	45	23
38	30	9.704287	10.295713	9.768558	10.231442	10.064271	9.935729	30	22
39	45	9.704341	10.295659	9.768631	10.231369	10.064290	9.935710	15	21
40	25	9.704395	10.295605	9.768703	10.231297	10.064308	9.935692	35	20
41	15	9.704448	10.295552	9.768775	10.231225	10.064327	9.935673	45	19
42	30	9.704502	10.295498	9.768848	10.231152	10.064345	9.935655	30	18
43	45	9.704556	10.295444	9.768920	10.231080	10.064364	9.935636	15	17
44	26	9.704610	10.295390	9.768992	10.231008	10.064382	9.935618	34	16
45	15	9.704664	10.295336	9.769064	10.230936	10.064401	9.935599	45	15
46	30	9.704717	10.295283	9.769137	10.230863	10.064420	9.935580	30	14
47	45	9.704771	10.295229	9.769209	10.230791	10.064438	9.935562	15	13
48	27	9.704825	10.295175	9.769281	10.230719	10.064457	9.935543	33	12
49	15	9.704878	10.295122	9.769354	10.230646	10.064475	9.935525	45	11
50	30	9.704932	10.295068	9.769426	10.230574	10.064494	9.935506	30	10
51	45	9.704986	10.295014	9.769498	10.230502	10.064512	9.935488	15	9
52	28	9.705040	10.294960	9.769570	10.230430	10.064531	9.935469	32	8
53	15	9.705093	10.294907	9.769643	10.230357	10.064550	9.935450	45	7
54	30	9.705147	10.294853	9.769715	10.230285	10.064568	9.935432	30	6
55	45	9.705201	10.294799	9.769787	10.230213	10.064587	9.935413	15	5
56	29	9.705254	10.294746	9.769860	10.230140	10.064605	9.935395	31	4
57	15	9.705308	10.294692	9.769932	10.230068	10.064624	9.935376	45	3
58	30	9.705362	10.294638	9.770004	10.229996	10.064642	9.935358	30	2
59	45	9.705415	10.294585	9.770076	10.229924	10.064661	9.935339	15	1
60	30	9.705469	10.294531	9.770148	10.229852	10.064680	9.935320	30	0
cos.	"	cosine.	secant.	cotang ^{nt} .	tangent.	coscant.	sine.	"	tan.
3 ^d 58.		LOG. SINES, &c.						59 deg.	

2 ^h 2 ^m .		LOG. SINES, &c. (t.)						30 deg.	
sec.	#	sine.	secant.	tangent.	cotangent.	secant.	cosine.	#	sec.
0	30	9.705469	10.294531	9.770148	10.229852	10.064680	9.935320	30	60
1	15	9.705522	10.294478	9.770221	10.229779	10.064698	9.935302	45	59
2	30	9.705576	10.294424	9.770293	10.229707	10.064717	9.935283	30	58
3	45	9.705630	10.294370	9.770365	10.229635	10.064735	9.935265	15	57
4	31	9.705683	10.294317	9.770437	10.229563	10.064754	9.935246	29	56
5	15	9.705737	10.294263	9.770509	10.229491	10.064773	9.935227	45	55
6	30	9.705790	10.294210	9.770582	10.229418	10.064791	9.935209	30	54
7	45	9.705844	10.294156	9.770654	10.229346	10.064810	9.935190	15	53
8	32	9.705897	10.294103	9.770726	10.229274	10.064829	9.935171	28	52
9	15	9.705951	10.294049	9.770798	10.229202	10.064847	9.935153	45	51
10	30	9.706005	10.293995	9.770870	10.229130	10.064866	9.935134	30	50
11	45	9.706058	10.293942	9.770943	10.229057	10.064884	9.935116	15	49
12	33	9.706112	10.293888	9.771015	10.228985	10.064903	9.935097	27	48
13	15	9.706165	10.293835	9.771087	10.228913	10.064922	9.935078	45	47
14	30	9.706219	10.293781	9.771159	10.228841	10.064940	9.935060	30	46
15	45	9.706272	10.293728	9.771231	10.228769	10.064959	9.935041	15	45
16	34	9.706326	10.293674	9.771303	10.228697	10.064978	9.935022	26	44
17	15	9.706379	10.293621	9.771375	10.228625	10.064996	9.935004	45	43
18	30	9.706432	10.293568	9.771447	10.228553	10.065015	9.934985	30	42
19	45	9.706486	10.293514	9.771520	10.228480	10.065034	9.934966	15	41
20	35	9.706539	10.293461	9.771592	10.228408	10.065052	9.934948	25	40
21	15	9.706593	10.293407	9.771664	10.228336	10.065071	9.934929	45	39
22	30	9.706646	10.293354	9.771736	10.228264	10.065090	9.934910	30	38
23	45	9.706700	10.293300	9.771808	10.228192	10.065108	9.934892	15	37
24	36	9.706753	10.293247	9.771880	10.228120	10.065127	9.934873	24	36
25	15	9.706806	10.293194	9.771952	10.228048	10.065146	9.934854	45	35
26	30	9.706860	10.293140	9.772024	10.227976	10.065164	9.934836	30	34
27	45	9.706913	10.293087	9.772096	10.227904	10.065183	9.934817	15	33
28	37	9.706967	10.293033	9.772168	10.227832	10.065202	9.934798	23	32
29	15	9.707020	10.292980	9.772240	10.227760	10.065220	9.934780	45	31
30	30	9.707073	10.292927	9.772312	10.227688	10.065239	9.934761	30	30
31	45	9.707127	10.292873	9.772384	10.227616	10.065258	9.934742	15	29
32	38	9.707180	10.292820	9.772457	10.227543	10.065277	9.934723	22	28
33	15	9.707233	10.292767	9.772529	10.227471	10.065295	9.934705	45	27
34	30	9.707287	10.292713	9.772601	10.227399	10.065314	9.934686	30	26
35	45	9.707340	10.292660	9.772673	10.227327	10.065333	9.934667	15	25
36	39	9.707393	10.292607	9.772745	10.227255	10.065351	9.934649	21	24
37	15	9.707447	10.292553	9.772817	10.227183	10.065370	9.934630	45	23
38	30	9.707500	10.292500	9.772889	10.227111	10.065389	9.934611	30	22
39	45	9.707553	10.292447	9.772961	10.227039	10.065408	9.934592	15	21
40	40	9.707606	10.292394	9.773033	10.226967	10.065426	9.934574	20	20
41	15	9.707660	10.292340	9.773105	10.226895	10.065445	9.934555	45	19
42	30	9.707713	10.292287	9.773177	10.226823	10.065464	9.934536	30	18
43	45	9.707766	10.292234	9.773249	10.226751	10.065482	9.934518	15	17
44	41	9.707819	10.292181	9.773321	10.226679	10.065501	9.934499	19	16
45	15	9.707873	10.292127	9.773393	10.226607	10.065520	9.934480	45	15
46	30	9.707926	10.292074	9.773464	10.226536	10.065539	9.934461	30	14
47	45	9.707979	10.292021	9.773536	10.226464	10.065557	9.934443	15	13
48	42	9.708032	10.291968	9.773608	10.226392	10.065576	9.934424	18	12
49	15	9.708085	10.291915	9.773680	10.226320	10.065595	9.934405	45	11
50	30	9.708139	10.291861	9.773752	10.226248	10.065614	9.934386	30	10
51	45	9.708192	10.291808	9.773824	10.226176	10.065632	9.934368	15	9
52	43	9.708245	10.291755	9.773896	10.226104	10.065651	9.934349	17	8
53	15	9.708298	10.291702	9.773968	10.226032	10.065670	9.934330	45	7
54	30	9.708351	10.291649	9.774040	10.225960	10.065689	9.934311	30	6
55	45	9.708404	10.291596	9.774112	10.225888	10.065708	9.934292	15	5
56	44	9.708457	10.291543	9.774184	10.225816	10.065726	9.934274	16	4
57	15	9.708511	10.291489	9.774256	10.225744	10.065745	9.934255	45	3
58	30	9.708564	10.291436	9.774328	10.225672	10.065764	9.934236	30	2
59	45	9.708617	10.291383	9.774399	10.225601	10.065783	9.934217	15	1
60	45	9.708670	10.291330	9.774471	10.225529	10.065801	9.934199	15	0
sec.	#	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	#	sec.
3 ^h 57 ^m .		LOG. SINES, &c.						59 deg.	

2 ^h 3 ^m .		LOG. SINES, &c. (L.)						30 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.708670	10.291330	9.774471	10.225529	10.065801	9.934199	15	60
1	15	9.708723	10.291277	9.774543	10.225457	10.065820	9.934180	45	59
2	30	9.708776	10.291224	9.774615	10.225385	10.065839	9.934161	30	58
3	45	9.708829	10.291171	9.774687	10.225313	10.065858	9.934142	15	57
4	46	9.708882	10.291118	9.774759	10.225241	10.065877	9.934123	14	56
5	15	9.708935	10.291065	9.774831	10.225169	10.065895	9.934105	45	55
6	30	9.708988	10.291012	9.774902	10.225098	10.065914	9.934086	30	54
7	45	9.709041	10.290959	9.774974	10.225026	10.065933	9.934067	15	53
8	47	9.709094	10.290906	9.775046	10.224954	10.065952	9.934048	13	52
9	15	9.709147	10.290853	9.775118	10.224882	10.065971	9.934029	45	51
10	30	9.709200	10.290800	9.775190	10.224810	10.065990	9.934010	30	50
11	45	9.709253	10.290747	9.775262	10.224738	10.066008	9.933992	15	49
12	48	9.709306	10.290694	9.775333	10.224667	10.066027	9.933973	12	48
13	15	9.709359	10.290641	9.775405	10.224595	10.066046	9.933954	45	47
14	30	9.709412	10.290588	9.775477	10.224523	10.066065	9.933935	30	46
15	45	9.709465	10.290535	9.775549	10.224451	10.066084	9.933916	15	45
16	49	9.709518	10.290482	9.775621	10.224379	10.066102	9.933898	11	44
17	15	9.709571	10.290429	9.775692	10.224308	10.066121	9.933879	45	43
18	30	9.709624	10.290376	9.775764	10.224236	10.066140	9.933860	30	42
19	45	9.709677	10.290323	9.775836	10.224164	10.066159	9.933841	15	41
20	50	9.709730	10.290270	9.775908	10.224092	10.066178	9.933822	10	40
21	15	9.709783	10.290217	9.775979	10.224021	10.066197	9.933803	45	39
22	30	9.709836	10.290164	9.776051	10.223949	10.066216	9.933784	30	38
23	45	9.709889	10.290111	9.776123	10.223877	10.066234	9.933766	15	37
24	51	9.709941	10.290059	9.776195	10.223805	10.066253	9.933747	9	36
25	15	9.709994	10.290006	9.776266	10.223734	10.066270	9.933730	45	35
26	30	9.710047	10.289953	9.776338	10.223662	10.066291	9.933709	30	34
27	45	9.710100	10.289900	9.776410	10.223590	10.066310	9.933690	15	33
28	52	9.710153	10.289847	9.776482	10.223518	10.066329	9.933671	8	32
29	15	9.710206	10.289794	9.776553	10.223447	10.066348	9.933652	45	31
30	30	9.710259	10.289741	9.776625	10.223375	10.066367	9.933633	30	30
31	45	9.710311	10.289689	9.776697	10.223303	10.066385	9.933615	15	29
32	53	9.710364	10.289636	9.776768	10.223232	10.066404	9.933596	7	28
33	15	9.710417	10.289583	9.776840	10.223160	10.066423	9.933577	45	27
34	30	9.710470	10.289530	9.776912	10.223088	10.066442	9.933558	30	26
35	45	9.710523	10.289477	9.776983	10.223017	10.066461	9.933539	15	25
36	54	9.710575	10.289425	9.777055	10.222945	10.066480	9.933520	6	24
37	15	9.710628	10.289372	9.777127	10.222873	10.066499	9.933501	45	23
38	30	9.710681	10.289319	9.777198	10.222802	10.066518	9.933482	30	22
39	45	9.710734	10.289266	9.777270	10.222730	10.066537	9.933463	15	21
40	55	9.710786	10.289214	9.777342	10.222658	10.066556	9.933444	5	20
41	15	9.710839	10.289161	9.777413	10.222587	10.066574	9.933426	45	19
42	30	9.710892	10.289108	9.777485	10.222515	10.066593	9.933407	30	18
43	45	9.710944	10.289056	9.777557	10.222443	10.066612	9.933388	15	17
44	56	9.710997	10.289003	9.777628	10.222372	10.066631	9.933369	4	16
45	15	9.711050	10.288950	9.777700	10.222300	10.066650	9.933350	45	15
46	30	9.711103	10.288897	9.777772	10.222228	10.066669	9.933331	30	14
47	45	9.711155	10.288845	9.777843	10.222157	10.066688	9.933312	15	13
48	57	9.711208	10.288792	9.777915	10.222085	10.066707	9.933293	3	12
49	15	9.711261	10.288739	9.777986	10.222014	10.066726	9.933274	45	11
50	30	9.711313	10.288687	9.778058	10.221942	10.066745	9.933255	30	10
51	45	9.711366	10.288634	9.778130	10.221870	10.066764	9.933236	15	9
52	58	9.711419	10.288581	9.778201	10.221799	10.066783	9.933217	2	8
53	15	9.711471	10.288529	9.778273	10.221727	10.066802	9.933198	45	7
54	30	9.711524	10.288476	9.778344	10.221656	10.066821	9.933179	30	6
55	45	9.711576	10.288424	9.778416	10.221584	10.066840	9.933160	15	5
56	59	9.711629	10.288371	9.778487	10.221513	10.066859	9.933141	1	4
57	15	9.711682	10.288318	9.778559	10.221441	10.066878	9.933122	45	3
58	30	9.711734	10.288266	9.778631	10.221369	10.066897	9.933103	30	2
59	45	9.711787	10.288213	9.778702	10.221298	10.066915	9.933085	15	1
60	60	9.711839	10.288161	9.778774	10.221226	10.066934	9.933066	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 56 ^m .		LOG. SINES, &c.						59 deg.	

2 ^h 4 ^m .		LOG. SINRS, &c. (t.)					31 deg	
' "		sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	sec.
0		9.711839	10.288161	9.778774	10.221226	10.066934	9.933066	60
15		9.711892	10.288108	9.778845	10.221155	10.066953	9.933047	45
30		9.711944	10.288056	9.778917	10.221083	10.066972	9.933028	30
45		9.711997	10.288003	9.778988	10.221012	10.066991	9.933009	15
1		9.712049	10.287951	9.779060	10.220940	10.067010	9.932990	59
15		9.712102	10.287898	9.779131	10.220869	10.067029	9.932971	45
30		9.712155	10.287845	9.779203	10.220797	10.067048	9.932952	30
45		9.712207	10.287793	9.779274	10.220726	10.067067	9.932933	15
2		9.712260	10.287740	9.779346	10.220654	10.067086	9.932914	58
15		9.712312	10.287688	9.779417	10.220583	10.067105	9.932895	45
30		9.712364	10.287636	9.779489	10.220511	10.067124	9.932876	30
45		9.712417	10.287583	9.779560	10.220440	10.067143	9.932857	15
3		9.712469	10.287531	9.779632	10.220368	10.067162	9.932838	57
15		9.712522	10.287478	9.779703	10.220297	10.067181	9.932819	45
30		9.712574	10.287426	9.779775	10.220225	10.067200	9.932800	30
45		9.712627	10.287373	9.779846	10.220154	10.067219	9.932781	15
4		9.712679	10.287321	9.779918	10.220082	10.067238	9.932762	56
15		9.712732	10.287268	9.779989	10.220011	10.067258	9.932742	45
30		9.712784	10.287216	9.780061	10.219939	10.067277	9.932723	30
45		9.712836	10.287164	9.780132	10.219868	10.067296	9.932704	15
5		9.712889	10.287111	9.780203	10.219797	10.067315	9.932685	55
15		9.712941	10.287059	9.780275	10.219725	10.067334	9.932666	45
30		9.712994	10.287006	9.780346	10.219654	10.067353	9.932647	30
45		9.713046	10.286954	9.780418	10.219582	10.067372	9.932628	15
6		9.713098	10.286902	9.780489	10.219511	10.067391	9.932609	54
15		9.713151	10.286849	9.780560	10.219440	10.067410	9.932590	45
30		9.713203	10.286797	9.780632	10.219368	10.067429	9.932571	30
45		9.713255	10.286745	9.780703	10.219297	10.067448	9.932552	15
7		9.713308	10.286692	9.780775	10.219225	10.067467	9.932533	53
15		9.713360	10.286640	9.780846	10.219154	10.067486	9.932514	45
30		9.713412	10.286588	9.780917	10.219083	10.067505	9.932495	30
45		9.713465	10.286535	9.780989	10.219011	10.067524	9.932476	15
8		9.713517	10.286483	9.781060	10.218940	10.067543	9.932457	52
15		9.713569	10.286431	9.781131	10.218869	10.067562	9.932438	45
30		9.713621	10.286379	9.781203	10.218797	10.067581	9.932419	30
45		9.713674	10.286326	9.781274	10.218726	10.067601	9.932399	15
9		9.713726	10.286274	9.781346	10.218654	10.067620	9.932380	51
15		9.713778	10.286222	9.781417	10.218583	10.067639	9.932361	45
30		9.713830	10.286170	9.781488	10.218512	10.067658	9.932342	30
45		9.713883	10.286117	9.781560	10.218440	10.067677	9.932323	15
10		9.713935	10.286065	9.781631	10.218369	10.067696	9.932304	50
15		9.713987	10.286013	9.781702	10.218298	10.067715	9.932285	45
30		9.714039	10.285961	9.781773	10.218227	10.067734	9.932266	30
45		9.714091	10.285909	9.781845	10.218155	10.067753	9.932247	15
11		9.714144	10.285856	9.781916	10.218084	10.067772	9.932228	49
15		9.714196	10.285804	9.781987	10.218013	10.067792	9.932208	45
30		9.714248	10.285752	9.782059	10.217941	10.067811	9.932189	30
45		9.714300	10.285700	9.782130	10.217870	10.067830	9.932170	15
12		9.714352	10.285648	9.782201	10.217799	10.067849	9.932151	48
15		9.714404	10.285596	9.782273	10.217727	10.067868	9.932132	45
30		9.714457	10.285543	9.782344	10.217656	10.067887	9.932113	30
45		9.714509	10.285491	9.782415	10.217585	10.067906	9.932094	15
13		9.714561	10.285439	9.782486	10.217514	10.067925	9.932075	47
15		9.714613	10.285387	9.782558	10.217442	10.067945	9.932055	45
30		9.714665	10.285335	9.782629	10.217371	10.067964	9.932036	30
45		9.714717	10.285283	9.782700	10.217300	10.067983	9.932017	15
14		9.714769	10.285231	9.782771	10.217229	10.068002	9.931998	46
15		9.714821	10.285179	9.782843	10.217157	10.068021	9.931979	45
30		9.714873	10.285127	9.782914	10.217086	10.068040	9.931960	30
45		9.714925	10.285075	9.782985	10.217015	10.068060	9.931940	15
15		9.714978	10.285022	9.783056	10.216944	10.068079	9.931921	45
' "		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	sec.
3 ^h 55 ^m .		LOG. SINRS, &c.					58 deg	

2 ^h 5 ^m .		LOG. SINES, &c. (t.)						31 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.714978	10.285022	9.783056	10.216944	10.068079	9.931921	45	60
1	15	9.715030	10.284970	9.783127	10.216873	10.068098	9.931902	45	59
2	30	9.715082	10.284918	9.783199	10.216801	10.068117	9.931883	30	58
3	45	9.715134	10.284866	9.783270	10.216730	10.068136	9.931864	15	57
4	16	9.715186	10.284814	9.783341	10.216659	10.068155	9.931845	44	56
5	15	9.715238	10.284762	9.783412	10.216588	10.068175	9.931825	45	55
6	30	9.715290	10.284710	9.783483	10.216517	10.068194	9.931806	30	54
7	45	9.715342	10.284658	9.783555	10.216445	10.068213	9.931787	15	53
8	17	9.715394	10.284606	9.783626	10.216374	10.068232	9.931768	43	52
9	15	9.715446	10.284554	9.783697	10.216303	10.068251	9.931749	45	51
10	30	9.715498	10.284502	9.783768	10.216232	10.068271	9.931729	30	50
11	45	9.715550	10.284450	9.783839	10.216161	10.068290	9.931710	15	49
12	18	9.715601	10.284399	9.783910	10.216090	10.068309	9.931691	42	48
13	15	9.715653	10.284347	9.783981	10.216019	10.068328	9.931672	45	47
14	30	9.715705	10.284295	9.784053	10.215947	10.068347	9.931653	30	46
15	45	9.715757	10.284243	9.784124	10.215876	10.068367	9.931633	15	45
16	19	9.715809	10.284191	9.784195	10.215805	10.068386	9.931614	41	44
17	15	9.715861	10.284139	9.784266	10.215734	10.068405	9.931595	45	43
18	30	9.715913	10.284087	9.784337	10.215663	10.068424	9.931576	30	42
19	45	9.715965	10.284035	9.784408	10.215592	10.068443	9.931557	15	41
20	20	9.716017	10.283983	9.784479	10.215521	10.068463	9.931537	40	40
21	15	9.716069	10.283931	9.784550	10.215450	10.068482	9.931518	45	39
22	30	9.716120	10.283880	9.784622	10.215378	10.068501	9.931499	30	38
23	45	9.716172	10.283828	9.784693	10.215307	10.068520	9.931480	15	37
24	21	9.716224	10.283776	9.784764	10.215236	10.068540	9.931460	39	36
25	15	9.716276	10.283724	9.784835	10.215165	10.068559	9.931441	45	35
26	30	9.716328	10.283672	9.784906	10.215094	10.068578	9.931422	30	34
27	45	9.716380	10.283620	9.784977	10.215023	10.068597	9.931403	15	33
28	22	9.716432	10.283568	9.785048	10.214952	10.068617	9.931383	38	32
29	15	9.716483	10.283517	9.785119	10.214881	10.068636	9.931364	45	31
30	30	9.716535	10.283465	9.785190	10.214810	10.068655	9.931345	30	30
31	45	9.716587	10.283413	9.785261	10.214739	10.068674	9.931326	15	29
32	23	9.716639	10.283361	9.785332	10.214668	10.068694	9.931306	37	28
33	15	9.716690	10.283310	9.785403	10.214597	10.068713	9.931287	45	27
34	30	9.716742	10.283258	9.785474	10.214526	10.068732	9.931268	30	26
35	45	9.716794	10.283206	9.785545	10.214455	10.068751	9.931249	15	25
36	24	9.716846	10.283154	9.785616	10.214384	10.068771	9.931229	36	24
37	15	9.716897	10.283103	9.785687	10.214313	10.068790	9.931210	45	23
38	30	9.716949	10.283051	9.785758	10.214242	10.068809	9.931191	30	22
39	45	9.717001	10.282999	9.785829	10.214171	10.068829	9.931171	15	21
40	25	9.717053	10.282947	9.785900	10.214100	10.068848	9.931152	35	20
41	15	9.717104	10.282896	9.785971	10.214029	10.068867	9.931133	45	19
42	30	9.717156	10.282844	9.786042	10.213958	10.068886	9.931114	30	18
43	45	9.717208	10.282792	9.786113	10.213887	10.068906	9.931094	15	17
44	26	9.717259	10.282741	9.786184	10.213816	10.068925	9.931075	34	16
45	15	9.717311	10.282689	9.786255	10.213745	10.068944	9.931056	45	15
46	30	9.717363	10.282637	9.786326	10.213674	10.068964	9.931036	30	14
47	45	9.717414	10.282586	9.786397	10.213603	10.068983	9.931017	15	13
48	27	9.717466	10.282534	9.786468	10.213532	10.069002	9.930998	33	12
49	15	9.717518	10.282482	9.786539	10.213461	10.069022	9.930978	45	11
50	30	9.717569	10.282431	9.786610	10.213390	10.069041	9.930959	30	10
51	45	9.717621	10.282379	9.786681	10.213319	10.069060	9.930940	15	9
52	28	9.717672	10.282328	9.786752	10.213248	10.069080	9.930920	32	8
53	15	9.717724	10.282276	9.786823	10.213177	10.069099	9.930901	45	7
54	30	9.717776	10.282224	9.786894	10.213106	10.069118	9.930882	30	6
55	45	9.717827	10.282173	9.786965	10.213035	10.069138	9.930862	15	5
56	29	9.717879	10.282121	9.787036	10.212964	10.069157	9.930843	31	4
57	15	9.717930	10.282070	9.787107	10.212893	10.069176	9.930824	45	3
58	30	9.717982	10.282018	9.787177	10.212822	10.069196	9.930804	30	2
59	45	9.718034	10.281966	9.787248	10.212752	10.069215	9.930785	15	1
60	30	9.718085	10.281915	9.787319	10.212681	10.069234	9.930766	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 54 ^m .		LOG. SINES &c.						58 deg.	

2 ^h 6 ^m .		LOG. SINES, &c. (L.)						31 deg.	
sec.	°	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	°	sec.
0	30	9.718085	10.281915	9.787319	10.212681	10.069234	9.930766	30	60
1	15	9.718137	10.281863	9.787390	10.212610	10.069254	9.930746	45	50
2	30	9.718188	10.281812	9.787461	10.212539	10.069273	9.930727	30	58
3	45	9.718240	10.281760	9.787532	10.212468	10.069292	9.930708	15	57
4	31	9.718291	10.281709	9.787603	10.212397	10.069312	9.930688	29	56
5	15	9.718343	10.281657	9.787674	10.212326	10.069331	9.930669	45	55
6	30	9.718394	10.281606	9.787745	10.212255	10.069350	9.930650	30	54
7	45	9.718446	10.281554	9.787815	10.212185	10.069370	9.930630	15	53
8	32	9.718497	10.281503	9.787886	10.212114	10.069389	9.930611	28	52
9	15	9.718549	10.281451	9.787957	10.212043	10.069409	9.930591	45	51
10	30	9.718600	10.281400	9.788028	10.211972	10.069428	9.930572	30	50
11	45	9.718651	10.281349	9.788099	10.211901	10.069447	9.930553	15	49
12	33	9.718703	10.281297	9.788170	10.211830	10.069467	9.930533	27	48
13	15	9.718754	10.281246	9.788240	10.211760	10.069486	9.930514	45	47
14	30	9.718806	10.281194	9.788311	10.211689	10.069506	9.930494	30	46
15	45	9.718857	10.281143	9.788382	10.211618	10.069525	9.930475	15	45
16	34	9.718909	10.281091	9.788453	10.211547	10.069544	9.930456	26	44
17	15	9.718960	10.281040	9.788524	10.211476	10.069564	9.930436	45	43
18	30	9.719011	10.280989	9.788594	10.211406	10.069583	9.930417	30	42
19	45	9.719063	10.280937	9.788665	10.211335	10.069603	9.930397	15	41
20	35	9.719114	10.280886	9.788736	10.211264	10.069622	9.930378	25	40
21	15	9.719166	10.280834	9.788807	10.211193	10.069641	9.930359	45	39
22	30	9.719217	10.280783	9.788878	10.211122	10.069661	9.930339	30	38
23	45	9.719268	10.280732	9.788948	10.211052	10.069680	9.930320	15	37
24	36	9.719320	10.280680	9.789019	10.210981	10.069700	9.930300	24	36
25	15	9.719371	10.280629	9.789090	10.210910	10.069719	9.930281	45	35
26	30	9.719422	10.280578	9.789161	10.210839	10.069739	9.930261	30	34
27	45	9.719474	10.280526	9.789231	10.210769	10.069758	9.930242	15	33
28	37	9.719525	10.280475	9.789302	10.210698	10.069777	9.930223	23	32
29	15	9.719576	10.280424	9.789373	10.210627	10.069797	9.930203	45	31
30	30	9.719627	10.280373	9.789444	10.210556	10.069816	9.930184	30	30
31	45	9.719679	10.280321	9.789514	10.210486	10.069836	9.930164	15	29
32	38	9.719730	10.280270	9.789585	10.210415	10.069855	9.930145	22	28
33	15	9.719781	10.280219	9.789656	10.210344	10.069875	9.930125	45	27
34	30	9.719833	10.280167	9.789727	10.210273	10.069894	9.930106	30	26
35	45	9.719884	10.280116	9.789797	10.210203	10.069914	9.930086	15	25
36	39	9.719935	10.280065	9.789868	10.210132	10.069933	9.930067	21	24
37	15	9.719986	10.280014	9.789939	10.210061	10.069953	9.930047	45	23
38	30	9.720037	10.279963	9.790009	10.209991	10.069972	9.930028	30	22
39	45	9.720089	10.279911	9.790080	10.209920	10.069991	9.930009	15	21
40	40	9.720140	10.279860	9.790151	10.209849	10.070011	9.929989	20	20
41	15	9.720191	10.279809	9.790221	10.209779	10.070030	9.929970	45	19
42	30	9.720242	10.279758	9.790292	10.209708	10.070050	9.929950	30	18
43	45	9.720293	10.279707	9.790363	10.209637	10.070069	9.929931	15	17
44	41	9.720345	10.279655	9.790433	10.209567	10.070089	9.929911	19	16
45	15	9.720396	10.279604	9.790504	10.209496	10.070108	9.929892	45	15
46	30	9.720447	10.279553	9.790575	10.209425	10.070128	9.929872	30	14
47	45	9.720498	10.279502	9.790645	10.209355	10.070147	9.929853	15	13
48	42	9.720549	10.279451	9.790716	10.209284	10.070167	9.929833	18	12
49	15	9.720600	10.279400	9.790787	10.209213	10.070186	9.929814	45	11
50	30	9.720651	10.279349	9.790857	10.209143	10.070206	9.929794	30	10
51	45	9.720703	10.279297	9.790928	10.209072	10.070225	9.929775	15	9
52	43	9.720754	10.279246	9.790999	10.209001	10.070245	9.929755	17	8
53	15	9.720805	10.279195	9.791069	10.208931	10.070264	9.929736	45	7
54	30	9.720856	10.279144	9.791140	10.208860	10.070284	9.929716	30	6
55	45	9.720907	10.279093	9.791210	10.208790	10.070304	9.929696	15	5
56	44	9.720958	10.279042	9.791281	10.208719	10.070323	9.929677	16	4
57	15	9.721009	10.278991	9.791352	10.208648	10.070343	9.929657	45	3
58	30	9.721060	10.278940	9.791422	10.208578	10.070362	9.929638	30	2
59	45	9.721111	10.278889	9.791493	10.208507	10.070382	9.929618	15	1
60	45	9.721162	10.278838	9.791563	10.208437	10.070401	9.929599	15	0
sec.	°	cosine.	secant.	cotangent.	tangent.	co-secant.	sine.	°	sec.
3 ^h 53 ^m .		LOG. SINES, &c.						58 deg.	

2 ^h 7 ^m .		LOG. SINES, &c. (t.)						31 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.721162	10.278838	9.791563	10.208437	10.070401	9.929599	15	60
1	15	9.721213	10.278787	9.791634	10.208366	10.070421	9.929579	45	59
2	30	9.721264	10.278736	9.791705	10.208295	10.070440	9.929560	30	58
3	45	9.721315	10.278685	9.791775	10.208225	10.070460	9.929540	15	57
4	46	9.721366	10.278634	9.791846	10.208154	10.070479	9.929521	14	56
5	15	9.721417	10.278583	9.791916	10.208084	10.070499	9.929501	45	55
6	30	9.721468	10.278532	9.791987	10.208013	10.070519	9.929481	30	54
7	45	9.721519	10.278481	9.792057	10.207943	10.070538	9.929462	15	53
8	47	9.721570	10.278430	9.792128	10.207872	10.070558	9.929442	13	52
9	15	9.721621	10.278379	9.792198	10.207802	10.070577	9.929423	45	51
10	30	9.721672	10.278328	9.792269	10.207731	10.070597	9.929403	30	50
11	45	9.721723	10.278277	9.792340	10.207660	10.070616	9.929384	15	49
12	48	9.721774	10.278226	9.792410	10.207590	10.070636	9.929364	12	48
13	15	9.721825	10.278175	9.792481	10.207519	10.070656	9.929344	45	47
14	30	9.721876	10.278124	9.792551	10.207449	10.070675	9.929325	30	46
15	45	9.721927	10.278073	9.792622	10.207378	10.070695	9.929305	15	45
16	49	9.721978	10.278022	9.792692	10.207308	10.070714	9.929286	11	44
17	15	9.722029	10.277971	9.792763	10.207237	10.070734	9.929266	45	43
18	30	9.722080	10.277920	9.792833	10.207167	10.070754	9.929246	30	42
19	45	9.722130	10.277870	9.792904	10.207096	10.070773	9.929227	15	41
20	50	9.722181	10.277819	9.792974	10.207026	10.070793	9.929207	10	40
21	15	9.722232	10.277768	9.793045	10.206955	10.070812	9.929188	45	39
22	30	9.722283	10.277717	9.793115	10.206885	10.070832	9.929168	30	38
23	45	9.722334	10.277666	9.793185	10.206815	10.070852	9.929148	15	37
24	51	9.722385	10.277615	9.793256	10.206744	10.070871	9.929129	9	36
25	15	9.722436	10.277564	9.793326	10.206674	10.070891	9.929109	45	35
26	30	9.722486	10.277514	9.793397	10.206603	10.070910	9.929090	30	34
27	45	9.722537	10.277463	9.793467	10.206533	10.070930	9.929070	15	33
28	52	9.722588	10.277412	9.793538	10.206462	10.070950	9.929050	8	32
29	15	9.722639	10.277361	9.793608	10.206392	10.070969	9.929031	45	31
30	30	9.722690	10.277310	9.793679	10.206321	10.070989	9.929011	30	30
31	45	9.722740	10.277260	9.793749	10.206251	10.071009	9.928991	15	29
32	53	9.722791	10.277209	9.793819	10.206181	10.071028	9.928972	7	28
33	15	9.722842	10.277158	9.793890	10.206110	10.071048	9.928952	45	27
34	30	9.722893	10.277107	9.793960	10.206040	10.071068	9.928932	30	26
35	45	9.722944	10.277056	9.794031	10.205969	10.071087	9.928913	15	25
36	54	9.722994	10.277006	9.794101	10.205899	10.071107	9.928893	6	24
37	15	9.723045	10.276955	9.794171	10.205829	10.071127	9.928873	45	23
38	30	9.723096	10.276904	9.794242	10.205758	10.071146	9.928854	30	22
39	45	9.723146	10.276854	9.794312	10.205688	10.071166	9.928834	15	21
40	55	9.723197	10.276803	9.794383	10.205617	10.071186	9.928814	5	20
41	15	9.723248	10.276752	9.794453	10.205547	10.071205	9.928795	45	19
42	30	9.723299	10.276701	9.794523	10.205477	10.071225	9.928775	30	18
43	45	9.723349	10.276651	9.794594	10.205406	10.071245	9.928755	15	17
44	56	9.723400	10.276600	9.794664	10.205336	10.071264	9.928736	4	16
45	15	9.723451	10.276549	9.794734	10.205266	10.071284	9.928716	45	15
46	30	9.723501	10.276499	9.794805	10.205195	10.071304	9.928696	30	14
47	45	9.723552	10.276448	9.794875	10.205125	10.071323	9.928677	15	13
48	57	9.723603	10.276397	9.794945	10.205055	10.071343	9.928657	3	12
49	15	9.723653	10.276347	9.795016	10.204984	10.071363	9.928637	45	11
50	30	9.723704	10.276296	9.795086	10.204914	10.071382	9.928618	30	10
51	45	9.723754	10.276246	9.795156	10.204844	10.071402	9.928598	15	9
52	58	9.723805	10.276195	9.795227	10.204773	10.071422	9.928578	2	8
53	15	9.723856	10.276144	9.795297	10.204703	10.071441	9.928559	45	7
54	30	9.723906	10.276094	9.795367	10.204633	10.071461	9.928539	30	6
55	45	9.723957	10.276043	9.795438	10.204562	10.071481	9.928519	15	5
56	59	9.724007	10.275993	9.795508	10.204492	10.071501	9.928499	1	4
57	15	9.724058	10.275942	9.795578	10.204422	10.071520	9.928480	45	3
58	30	9.724109	10.275891	9.795649	10.204351	10.071540	9.928460	30	2
59	45	9.724159	10.275841	9.795719	10.204281	10.071560	9.928440	15	1
60	60	9.724210	10.275790	9.795789	10.204211	10.071580	9.928420	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 52 ^m .		LOG. SINES &c.						58 deg.	

2 ^h 8 ^m .		LOG SINES, &c. (t.)						32 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.724210	10.275790	9.795789	10.204211	10.071580	9.928420	60	60
1	15	9.724260	10.275740	9.795859	10.204141	10.071599	9.928401	45	59
2	30	9.724311	10.275689	9.795930	10.204070	10.071619	9.928381	30	58
3	45	9.724361	10.275639	9.796000	10.204000	10.071639	9.928361	15	57
4	1	9.724412	10.275588	9.796070	10.203930	10.071659	9.928341	59	56
5	15	9.724462	10.275538	9.796141	10.203859	10.071678	9.928322	45	55
6	30	9.724513	10.275487	9.796211	10.203789	10.071698	9.928302	30	54
7	45	9.724563	10.275437	9.796281	10.203719	10.071718	9.928282	15	53
8	2	9.724614	10.275386	9.796351	10.203649	10.071738	9.928262	58	52
9	15	9.724664	10.275336	9.796421	10.203579	10.071757	9.928243	45	51
10	30	9.724715	10.275285	9.796492	10.203508	10.071777	9.928223	30	50
11	45	9.724765	10.275235	9.796562	10.203438	10.071797	9.928203	15	49
12	3	9.724816	10.275184	9.796632	10.203368	10.071817	9.928183	57	48
13	15	9.724866	10.275134	9.796702	10.203298	10.071836	9.928164	45	47
14	30	9.724916	10.275084	9.796773	10.203227	10.071856	9.928144	30	46
15	45	9.724967	10.275033	9.796843	10.203157	10.071876	9.928124	15	45
16	4	9.725017	10.274983	9.796913	10.203087	10.071896	9.928104	56	44
17	15	9.725068	10.274932	9.796983	10.203017	10.071916	9.928084	45	43
18	30	9.725118	10.274882	9.797053	10.202947	10.071935	9.928065	30	42
19	45	9.725169	10.274831	9.797124	10.202876	10.071955	9.928045	15	41
20	5	9.725219	10.274781	9.797194	10.202806	10.071975	9.928025	55	40
21	15	9.725269	10.274731	9.797264	10.202736	10.071995	9.928005	45	39
22	30	9.725320	10.274680	9.797334	10.202666	10.072015	9.927985	30	38
23	45	9.725370	10.274630	9.797404	10.202596	10.072034	9.927966	15	37
24	6	9.725420	10.274580	9.797474	10.202526	10.072054	9.927946	54	36
25	15	9.725471	10.274529	9.797545	10.202455	10.072074	9.927926	45	35
26	30	9.725521	10.274479	9.797615	10.202385	10.072094	9.927906	30	34
27	45	9.725571	10.274429	9.797685	10.202315	10.072114	9.927886	15	33
28	7	9.725622	10.274378	9.797755	10.202245	10.072133	9.927867	53	32
29	15	9.725672	10.274328	9.797825	10.202175	10.072153	9.927847	45	31
30	30	9.725722	10.274278	9.797895	10.202105	10.072173	9.927827	30	30
31	45	9.725773	10.274227	9.797965	10.202035	10.072193	9.927807	15	29
32	8	9.725823	10.274177	9.798036	10.201964	10.072213	9.927787	52	28
33	15	9.725873	10.274127	9.798106	10.201894	10.072233	9.927767	45	27
34	30	9.725923	10.274077	9.798176	10.201824	10.072252	9.927748	30	26
35	45	9.725974	10.274026	9.798246	10.201754	10.072272	9.927728	15	25
36	9	9.726024	10.273976	9.798316	10.201684	10.072292	9.927708	51	24
37	15	9.726074	10.273926	9.798386	10.201614	10.072312	9.927688	45	23
38	30	9.726124	10.273876	9.798456	10.201544	10.072332	9.927668	30	22
39	45	9.726175	10.273825	9.798526	10.201474	10.072352	9.927648	15	21
40	10	9.726225	10.273775	9.798596	10.201404	10.072372	9.927628	50	20
41	15	9.726275	10.273725	9.798666	10.201334	10.072391	9.927609	45	19
42	30	9.726325	10.273675	9.798736	10.201264	10.072411	9.927589	30	18
43	45	9.726375	10.273625	9.798807	10.201193	10.072431	9.927569	15	17
44	11	9.726426	10.273574	9.798877	10.201123	10.072451	9.927549	49	16
45	15	9.726476	10.273524	9.798947	10.201053	10.072471	9.927529	45	15
46	30	9.726526	10.273474	9.799017	10.200983	10.072491	9.927509	30	14
47	45	9.726576	10.273424	9.799087	10.200913	10.072511	9.927489	15	13
48	12	9.726626	10.273374	9.799157	10.200843	10.072531	9.927469	48	12
49	15	9.726676	10.273324	9.799227	10.200773	10.072550	9.927450	45	11
50	30	9.726727	10.273273	9.799297	10.200703	10.072570	9.927430	30	10
51	45	9.726777	10.273223	9.799367	10.200633	10.072590	9.927410	15	9
52	13	9.726827	10.273173	9.799437	10.200563	10.072610	9.927390	47	8
53	15	9.726877	10.273123	9.799507	10.200493	10.072630	9.927370	45	7
54	30	9.726927	10.273073	9.799577	10.200423	10.072650	9.927350	30	6
55	45	9.726977	10.273023	9.799647	10.200353	10.072670	9.927330	15	5
56	14	9.727027	10.272973	9.799717	10.200283	10.072690	9.927310	46	4
57	15	9.727077	10.272923	9.799787	10.200213	10.072710	9.927290	45	3
58	30	9.727127	10.272873	9.799857	10.200143	10.072730	9.927270	30	2
59	45	9.727178	10.272822	9.799927	10.200073	10.072750	9.927250	15	1
60	15	9.727228	10.272772	9.799997	10.200003	10.072769	9.927231	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 51 ^m .		LOG SINES, &c.						57 deg.	

2 ^h 9 ^m		LOG. SINES, &c. (t.)						32 deg.	
sec.	"	sine.	cosecant	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.727228	10.272772	9.799997	10.200003	10.072769	9.927231	45	60
1	15	9.727278	10.272722	9.800067	10.199933	10.072789	9.927211	45	59
2	30	9.727328	10.272672	9.800137	10.199863	10.072809	9.927191	30	58
3	45	9.727378	10.272622	9.800207	10.199793	10.072829	9.927171	15	57
4	16	9.727428	10.272572	9.800277	10.199723	10.072849	9.927151	44	56
5	15	9.727478	10.272522	9.800347	10.199653	10.072869	9.927131	45	55
6	30	9.727528	10.272472	9.800417	10.199583	10.072889	9.927111	30	54
7	45	9.727578	10.272422	9.800487	10.199513	10.072909	9.927091	15	53
8	17	9.727628	10.272372	9.800557	10.199443	10.072929	9.927071	43	52
9	15	9.727678	10.272322	9.800627	10.199373	10.072949	9.927051	45	51
10	30	9.727728	10.272272	9.800697	10.199303	10.072969	9.927031	30	50
11	45	9.727778	10.272222	9.800766	10.199234	10.072989	9.927011	15	49
12	18	9.727828	10.272172	9.800836	10.199164	10.073009	9.926991	42	48
13	15	9.727878	10.272122	9.800906	10.199094	10.073029	9.926971	45	47
14	30	9.727928	10.272072	9.800976	10.199024	10.073049	9.926951	30	46
15	45	9.727978	10.272022	9.801046	10.198954	10.073069	9.926931	15	45
16	19	9.728027	10.271973	9.801116	10.198884	10.073089	9.926911	41	44
17	15	9.728077	10.271923	9.801186	10.198814	10.073109	9.926891	45	43
18	30	9.728127	10.271873	9.801256	10.198744	10.073129	9.926871	30	42
19	45	9.728177	10.271823	9.801326	10.198674	10.073149	9.926851	15	41
20	20	9.728227	10.271773	9.801396	10.198604	10.073169	9.926831	40	40
21	15	9.728277	10.271723	9.801466	10.198534	10.073189	9.926811	45	39
22	30	9.728327	10.271673	9.801535	10.198465	10.073209	9.926791	30	38
23	45	9.728377	10.271623	9.801605	10.198395	10.073229	9.926771	15	37
24	21	9.728427	10.271573	9.801675	10.198325	10.073249	9.926751	39	36
25	15	9.728476	10.271524	9.801745	10.198255	10.073269	9.926731	45	35
26	30	9.728526	10.271474	9.801815	10.198185	10.073289	9.926711	30	34
27	45	9.728576	10.271424	9.801885	10.198115	10.073309	9.926691	15	33
28	22	9.728626	10.271374	9.801955	10.198045	10.073329	9.926671	38	32
29	15	9.728676	10.271324	9.802024	10.197976	10.073349	9.926651	45	31
30	30	9.728726	10.271274	9.802094	10.197906	10.073369	9.926631	30	30
31	45	9.728775	10.271225	9.802164	10.197836	10.073389	9.926611	15	29
32	23	9.728825	10.271175	9.802234	10.197766	10.073409	9.926591	37	28
33	15	9.728875	10.271125	9.802304	10.197696	10.073429	9.926571	45	27
34	30	9.728925	10.271075	9.802374	10.197626	10.073449	9.926551	30	26
35	45	9.728975	10.271025	9.802443	10.197557	10.073469	9.926531	15	25
36	24	9.729024	10.270976	9.802513	10.197487	10.073489	9.926511	36	24
37	15	9.729074	10.270926	9.802583	10.197417	10.073509	9.926491	45	23
38	30	9.729124	10.270876	9.802653	10.197347	10.073529	9.926471	30	22
39	45	9.729174	10.270826	9.802723	10.197277	10.073549	9.926451	15	21
40	25	9.729223	10.270777	9.802792	10.197208	10.073569	9.926431	35	20
41	15	9.729273	10.270727	9.802862	10.197138	10.073589	9.926411	45	19
42	30	9.729323	10.270677	9.802932	10.197068	10.073609	9.926391	30	18
43	45	9.729373	10.270627	9.803002	10.196998	10.073629	9.926371	15	17
44	26	9.729422	10.270578	9.803072	10.196928	10.073649	9.926351	34	16
45	15	9.729472	10.270528	9.803141	10.196859	10.073669	9.926331	45	15
46	30	9.729522	10.270478	9.803211	10.196789	10.073689	9.926311	30	14
47	45	9.729571	10.270429	9.803281	10.196719	10.073710	9.926290	15	13
48	27	9.729621	10.270379	9.803351	10.196649	10.073730	9.926270	33	12
49	15	9.729671	10.270329	9.803420	10.196580	10.073750	9.926250	45	11
50	30	9.729720	10.270280	9.803490	10.196510	10.073770	9.926230	30	10
51	45	9.729770	10.270230	9.803560	10.196440	10.073790	9.926210	15	9
52	28	9.729820	10.270180	9.803630	10.196370	10.073810	9.926190	32	8
53	15	9.729869	10.270131	9.803699	10.196301	10.073830	9.926170	45	7
54	30	9.729919	10.270081	9.803769	10.196231	10.073850	9.926150	30	6
55	45	9.729968	10.270032	9.803839	10.196161	10.073870	9.926130	15	5
56	29	9.730018	10.269982	9.803908	10.196092	10.073890	9.926110	31	4
57	15	9.730068	10.269932	9.803978	10.196022	10.073911	9.926089	45	3
58	30	9.730117	10.269883	9.804048	10.195952	10.073931	9.926069	30	2
59	45	9.730167	10.269833	9.804118	10.195882	10.073951	9.926049	15	1
60	30	9.730216	10.269784	9.804187	10.195813	10.073971	9.926029	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 50 ^m .		LOG. SINES, &c.						57 deg.	

2 ^h 10 ^m .		LOG. SINES, &c. (t.)						32 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	9.730216	10.269784	9.804187	10.195813	10.073971	9.926029	30	60
1	15	9.730266	10.269734	9.804257	10.195743	10.073991	9.926009	45	59
2	30	9.730316	10.269684	9.804327	10.195673	10.074011	9.925989	30	58
3	45	9.730365	10.269635	9.804396	10.195604	10.074031	9.925969	15	57
4	31	9.730415	10.269585	9.804466	10.195534	10.074051	9.925949	29	56
5	15	9.730464	10.269536	9.804536	10.195464	10.074072	9.925928	45	55
6	30	9.730514	10.269486	9.804605	10.195395	10.074092	9.925908	30	54
7	45	9.730563	10.269437	9.804675	10.195325	10.074112	9.925888	15	53
8	32	9.730613	10.269387	9.804745	10.195255	10.074132	9.925868	28	52
9	15	9.730662	10.269338	9.804814	10.195186	10.074152	9.925848	45	51
10	30	9.730712	10.269288	9.804884	10.195116	10.074172	9.925828	30	50
11	45	9.730761	10.269239	9.804954	10.195046	10.074192	9.925808	15	49
12	33	9.730811	10.269189	9.805023	10.194977	10.074213	9.925787	27	48
13	15	9.730860	10.269140	9.805093	10.194907	10.074233	9.925767	45	47
14	30	9.730910	10.269090	9.805163	10.194837	10.074253	9.925747	30	46
15	45	9.730959	10.269041	9.805232	10.194768	10.074273	9.925727	15	45
16	34	9.731009	10.268991	9.805302	10.194698	10.074293	9.925707	26	44
17	15	9.731058	10.268942	9.805371	10.194629	10.074313	9.925687	45	43
18	30	9.731108	10.268892	9.805441	10.194559	10.074334	9.925666	30	42
19	45	9.731157	10.268843	9.805511	10.194489	10.074354	9.925646	15	41
20	35	9.731206	10.268794	9.805580	10.194420	10.074374	9.925626	25	40
21	15	9.731256	10.268744	9.805650	10.194350	10.074394	9.925606	45	39
22	30	9.731305	10.268695	9.805719	10.194281	10.074414	9.925586	30	38
23	45	9.731355	10.268645	9.805789	10.194211	10.074434	9.925566	15	37
24	36	9.731404	10.268596	9.805859	10.194141	10.074455	9.925545	24	36
25	15	9.731453	10.268547	9.805928	10.194072	10.074475	9.925525	45	35
26	30	9.731503	10.268497	9.805998	10.194002	10.074495	9.925505	30	34
27	45	9.731552	10.268448	9.806067	10.193933	10.074515	9.925485	15	33
28	37	9.731601	10.268399	9.806137	10.193863	10.074535	9.925465	23	32
29	15	9.731651	10.268349	9.806206	10.193794	10.074556	9.925444	45	31
30	30	9.731700	10.268300	9.806276	10.193724	10.074576	9.925424	30	30
31	45	9.731749	10.268251	9.806346	10.193654	10.074596	9.925404	15	29
32	38	9.731799	10.268201	9.806415	10.193585	10.074616	9.925384	22	28
33	15	9.731848	10.268152	9.806485	10.193515	10.074637	9.925363	45	27
34	30	9.731897	10.268103	9.806554	10.193446	10.074657	9.925343	30	26
35	45	9.731947	10.268053	9.806624	10.193376	10.074677	9.925323	15	25
36	39	9.731996	10.268004	9.806693	10.193307	10.074697	9.925303	21	24
37	15	9.732045	10.267955	9.806763	10.193237	10.074718	9.925282	45	23
38	30	9.732095	10.267905	9.806832	10.193168	10.074738	9.925262	30	22
39	45	9.732144	10.267856	9.806902	10.193098	10.074758	9.925242	15	21
40	40	9.732193	10.267807	9.806971	10.193029	10.074778	9.925222	20	20
41	15	9.732242	10.267758	9.807041	10.192959	10.074799	9.925201	45	19
42	30	9.732292	10.267708	9.807110	10.192890	10.074819	9.925181	30	18
43	45	9.732341	10.267659	9.807180	10.192820	10.074839	9.925161	15	17
44	41	9.732390	10.267610	9.807249	10.192751	10.074859	9.925141	19	16
45	15	9.732439	10.267561	9.807319	10.192681	10.074880	9.925120	45	15
46	30	9.732489	10.267511	9.807388	10.192612	10.074900	9.925100	30	14
47	45	9.732538	10.267462	9.807458	10.192542	10.074920	9.925080	15	13
48	42	9.732587	10.267413	9.807527	10.192473	10.074940	9.925060	18	12
49	15	9.732636	10.267364	9.807597	10.192403	10.074961	9.925039	45	11
50	30	9.732685	10.267315	9.807666	10.192334	10.074981	9.925019	30	10
51	45	9.732734	10.267266	9.807736	10.192264	10.075001	9.924999	15	9
52	43	9.732784	10.267216	9.807805	10.192195	10.075021	9.924979	17	8
53	15	9.732833	10.267167	9.807875	10.192125	10.075042	9.924958	45	7
54	30	9.732882	10.267118	9.807944	10.192056	10.075062	9.924938	30	6
55	45	9.732931	10.267069	9.808013	10.191987	10.075082	9.924918	15	5
56	44	9.732980	10.267020	9.808083	10.191917	10.075103	9.924897	16	4
57	15	9.733029	10.266971	9.808152	10.191848	10.075123	9.924877	45	3
58	30	9.733079	10.266922	9.808222	10.191778	10.075143	9.924857	30	2
59	45	9.733128	10.266872	9.808291	10.191709	10.075164	9.924836	15	1
60	45	9.733177	10.266823	9.808361	10.191639	10.075184	9.924816	15	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 49 ^m .		LOG. SINES, &c.						57 deg.	

2° 11'.		LOG. SINES, &c. (t.)						32 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	"	sec.
0	45	9.733177	10.266823	9.808361	10.191639	10.075184	9.924816	15	60
1	15	9.733226	10.266774	9.808430	10.191570	10.075204	9.924796	45	59
2	30	9.733275	10.266725	9.808499	10.191501	10.075225	9.924775	30	58
3	45	9.733324	10.266676	9.808569	10.191431	10.075245	9.924755	15	57
4	46	9.733373	10.266627	9.808638	10.191362	10.075265	9.924735	14	56
5	15	9.733422	10.266578	9.808708	10.191292	10.075286	9.924714	45	55
6	30	9.733471	10.266529	9.808777	10.191223	10.075306	9.924694	30	54
7	45	9.733520	10.266480	9.808846	10.191154	10.075326	9.924674	15	53
8	47	9.733569	10.266431	9.808916	10.191084	10.075347	9.924653	13	52
9	15	9.733618	10.266382	9.808985	10.191015	10.075367	9.924633	45	51
10	30	9.733667	10.266333	9.809055	10.190945	10.075387	9.924613	30	50
11	45	9.733716	10.266284	9.809124	10.190876	10.075408	9.924592	15	49
12	48	9.733765	10.266235	9.809193	10.190807	10.075428	9.924572	12	48
13	15	9.733814	10.266186	9.809263	10.190737	10.075448	9.924552	45	47
14	30	9.733863	10.266137	9.809332	10.190668	10.075469	9.924531	30	46
15	45	9.733912	10.266088	9.809401	10.190599	10.075489	9.924511	15	45
16	49	9.733961	10.266039	9.809471	10.190529	10.075509	9.924491	11	44
17	15	9.734010	10.265990	9.809540	10.190460	10.075530	9.924470	45	43
18	30	9.734059	10.265941	9.809609	10.190391	10.075550	9.924450	30	42
19	45	9.734108	10.265892	9.809679	10.190321	10.075570	9.924430	15	41
20	50	9.734157	10.265843	9.809748	10.190252	10.075591	9.924409	10	40
21	15	9.734206	10.265794	9.809817	10.190183	10.075611	9.924389	45	39
22	30	9.734255	10.265745	9.809887	10.190113	10.075632	9.924368	30	38
23	45	9.734304	10.265696	9.809956	10.190044	10.075652	9.924348	15	37
24	51	9.734353	10.265647	9.810025	10.189975	10.075672	9.924328	9	36
25	15	9.734402	10.265598	9.810095	10.189905	10.075693	9.924307	45	35
26	30	9.734451	10.265549	9.810164	10.189836	10.075713	9.924287	30	34
27	45	9.734500	10.265500	9.810233	10.189767	10.075734	9.924266	15	33
28	52	9.734548	10.265452	9.810302	10.189698	10.075754	9.924246	8	32
29	15	9.734597	10.265403	9.810372	10.189628	10.075774	9.924226	45	31
30	30	9.734646	10.265354	9.810441	10.189559	10.075795	9.924205	30	30
31	45	9.734695	10.265305	9.810510	10.189490	10.075815	9.924185	15	29
32	53	9.734744	10.265256	9.810580	10.189420	10.075836	9.924164	7	28
33	15	9.734793	10.265207	9.810649	10.189351	10.075856	9.924144	45	27
34	30	9.734842	10.265158	9.810718	10.189282	10.075876	9.924124	30	26
35	45	9.734890	10.265110	9.810787	10.189213	10.075897	9.924103	15	25
36	54	9.734939	10.265061	9.810857	10.189143	10.075917	9.924083	6	24
37	15	9.734988	10.265012	9.810926	10.189074	10.075938	9.924062	45	23
38	30	9.735037	10.264963	9.810995	10.189005	10.075958	9.924042	30	22
39	45	9.735086	10.264914	9.811064	10.188936	10.075979	9.924021	15	21
40	55	9.735134	10.264866	9.811134	10.188866	10.075999	9.924001	5	20
41	15	9.735183	10.264817	9.811203	10.188797	10.076020	9.923980	45	19
42	30	9.735232	10.264768	9.811272	10.188728	10.076040	9.923960	30	18
43	45	9.735281	10.264719	9.811341	10.188659	10.076060	9.923940	15	17
44	56	9.735330	10.264670	9.811410	10.188590	10.076081	9.923919	4	16
45	15	9.735378	10.264622	9.811480	10.188520	10.076101	9.923899	45	15
46	30	9.735427	10.264573	9.811549	10.188451	10.076122	9.923878	30	14
47	45	9.735476	10.264524	9.811618	10.188382	10.076142	9.923858	15	13
48	57	9.735525	10.264475	9.811687	10.188313	10.076163	9.923837	3	12
49	15	9.735573	10.264427	9.811756	10.188244	10.076183	9.923817	45	11
50	30	9.735622	10.264378	9.811826	10.188174	10.076204	9.923796	30	10
51	45	9.735671	10.264329	9.811895	10.188105	10.076224	9.923776	15	9
52	58	9.735719	10.264281	9.811964	10.188036	10.076245	9.923755	2	8
53	15	9.735768	10.264232	9.812033	10.187967	10.076265	9.923735	45	7
54	30	9.735817	10.264183	9.812102	10.187898	10.076286	9.923714	30	6
55	45	9.735865	10.264135	9.812172	10.187828	10.076306	9.923694	15	5
56	59	9.735914	10.264086	9.812241	10.187759	10.076327	9.923673	1	4
57	15	9.735963	10.264037	9.812310	10.187690	10.076347	9.923653	45	3
58	30	9.736011	10.263989	9.812379	10.187621	10.076368	9.923632	30	2
59	45	9.736060	10.263940	9.812448	10.187552	10.076388	9.923612	15	1
60	60	9.736109	10.263891	9.812517	10.187483	10.076409	9.923591	0	0
sec.	"	cosec.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 48'.		LOG. SINES &c.						57 deg.	

2 ^d 12 ^m .		LOG. SINES, &c. (L.)						33 deg.	
sec.	"	sine.	cosecant.	tang-nt.	cotangent.	secant.	cosine.	"	sec.
0	0	9.736109	10.263891	9.812517	10.187483	10.076409	9.923591	60	60
1	15	9.736157	10.263843	9.812586	10.187414	10.076429	9.923571	45	59
2	30	9.736206	10.263794	9.812656	10.187344	10.076450	9.923550	30	58
3	45	9.736255	10.263745	9.812725	10.187275	10.076470	9.923530	15	57
4	1	9.736303	10.263697	9.812794	10.187206	10.076491	9.923509	59	56
5	15	9.736352	10.263648	9.812863	10.187137	10.076511	9.923489	45	55
6	30	9.736400	10.263600	9.812932	10.187068	10.076532	9.923468	30	54
7	45	9.736449	10.263551	9.813001	10.186999	10.076552	9.923448	15	53
8	2	9.736498	10.263502	9.813070	10.186930	10.076573	9.923427	58	52
9	15	9.736546	10.263454	9.813139	10.186861	10.076593	9.923407	45	51
10	30	9.736595	10.263405	9.813209	10.186791	10.076614	9.923386	30	50
11	45	9.736643	10.263357	9.813278	10.186722	10.076634	9.923366	15	49
12	3	9.736692	10.263308	9.813347	10.186653	10.076655	9.923345	57	48
13	15	9.736740	10.263260	9.813416	10.186584	10.076676	9.923324	45	47
14	30	9.736789	10.263211	9.813485	10.186515	10.076696	9.923304	30	46
15	45	9.736837	10.263163	9.813554	10.186446	10.076717	9.923283	15	45
16	4	9.736886	10.263114	9.813623	10.186377	10.076737	9.923263	56	44
17	15	9.736934	10.263066	9.813692	10.186308	10.076758	9.923242	45	43
18	30	9.736983	10.263017	9.813761	10.186239	10.076778	9.923222	30	42
19	45	9.737031	10.262969	9.813830	10.186170	10.076799	9.923201	15	41
20	5	9.737080	10.262920	9.813899	10.186101	10.076820	9.923180	55	40
21	15	9.737128	10.262872	9.813968	10.186032	10.076840	9.923160	45	39
22	30	9.737177	10.262823	9.814037	10.185963	10.076861	9.923139	30	38
23	45	9.737225	10.262775	9.814106	10.185894	10.076881	9.923119	15	37
24	6	9.737274	10.262726	9.814175	10.185825	10.076902	9.923098	54	36
25	15	9.737322	10.262678	9.814245	10.185755	10.076922	9.923078	45	35
26	30	9.737371	10.262629	9.814314	10.185686	10.076943	9.923057	30	34
27	45	9.737419	10.262581	9.814383	10.185617	10.076964	9.923036	15	33
28	7	9.737467	10.262533	9.814452	10.185548	10.076984	9.923016	53	32
29	15	9.737516	10.262484	9.814521	10.185479	10.077005	9.922995	45	31
30	30	9.737564	10.262436	9.814590	10.185410	10.077025	9.922975	30	30
31	45	9.737613	10.262387	9.814659	10.185341	10.077046	9.922954	15	29
32	8	9.737661	10.262339	9.814728	10.185272	10.077067	9.922933	52	28
33	15	9.737709	10.262291	9.814797	10.185203	10.077087	9.922913	45	27
34	30	9.737758	10.262242	9.814866	10.185134	10.077108	9.922892	30	26
35	45	9.737806	10.262194	9.814935	10.185065	10.077129	9.922871	15	25
36	9	9.737855	10.262145	9.815004	10.184996	10.077149	9.922851	51	24
37	15	9.737903	10.262097	9.815073	10.184927	10.077170	9.922830	45	23
38	30	9.737951	10.262049	9.815142	10.184858	10.077190	9.922810	30	22
39	45	9.738000	10.262000	9.815211	10.184789	10.077211	9.922789	15	21
40	10	9.738048	10.261952	9.815279	10.184721	10.077232	9.922768	50	20
41	15	9.738096	10.261904	9.815348	10.184652	10.077252	9.922748	45	19
42	30	9.738145	10.261855	9.815417	10.184583	10.077273	9.922727	30	18
43	45	9.738193	10.261807	9.815486	10.184514	10.077294	9.922706	15	17
44	11	9.738241	10.261759	9.815555	10.184445	10.077314	9.922686	49	16
45	15	9.738289	10.261711	9.815624	10.184376	10.077335	9.922665	45	15
46	30	9.738338	10.261662	9.815693	10.184307	10.077356	9.922644	30	14
47	45	9.738386	10.261614	9.815762	10.184238	10.077376	9.922624	15	13
48	12	9.738434	10.261566	9.815831	10.184169	10.077397	9.922603	48	12
49	15	9.738482	10.261518	9.815900	10.184100	10.077418	9.922582	45	11
50	30	9.738531	10.261469	9.815969	10.184031	10.077438	9.922562	30	10
51	45	9.738579	10.261421	9.816038	10.183962	10.077459	9.922541	15	9
52	13	9.738627	10.261373	9.816107	10.183893	10.077480	9.922520	47	8
53	15	9.738675	10.261325	9.816176	10.183824	10.077500	9.922500	45	7
54	30	9.738724	10.261276	9.816245	10.183755	10.077521	9.922479	30	6
55	45	9.738772	10.261228	9.816313	10.183687	10.077542	9.922458	15	5
56	14	9.738820	10.261180	9.816382	10.183618	10.077562	9.922438	46	4
57	15	9.738868	10.261132	9.816451	10.183549	10.077583	9.922417	45	3
58	30	9.738916	10.261084	9.816520	10.183480	10.077604	9.922396	30	2
59	45	9.738965	10.261035	9.816589	10.183411	10.077624	9.922376	15	1
60	15	9.739013	10.260987	9.816658	10.183342	10.077645	9.922355	45	0
sec.	"	sine.	cosecant.	tang-nt.	cotangent.	secant.	cosine.	"	sec.
3 ^d 47 ^m .		LOG. SINES, &c.						56 deg.	

2 ^h 13 ^m .		LOG. SINES, &c. (t.)						33 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.739013	10.260987	9.816658	10.183342	10.077645	9.922355	45	60
1	15	9.739061	10.260939	9.816727	10.183273	10.077666	9.922334	45	59
2	30	9.739109	10.260891	9.816796	10.183204	10.077687	9.922313	30	58
3	45	9.739157	10.260843	9.816865	10.183135	10.077707	9.922293	15	57
4	16	9.739205	10.260795	9.816933	10.183067	10.077728	9.922272	44	56
5	15	9.739254	10.260746	9.817002	10.182998	10.077749	9.922251	45	55
6	30	9.739302	10.260698	9.817071	10.182929	10.077769	9.922231	30	54
7	45	9.739350	10.260650	9.817140	10.182860	10.077790	9.922210	15	53
8	17	9.739398	10.260602	9.817209	10.182791	10.077811	9.922189	43	52
9	15	9.739446	10.260554	9.817278	10.182722	10.077832	9.922168	45	51
10	30	9.739494	10.260506	9.817346	10.182653	10.077852	9.922148	30	50
11	45	9.739542	10.260458	9.817415	10.182585	10.077873	9.922127	15	49
12	18	9.739590	10.260410	9.817484	10.182516	10.077894	9.922106	42	48
13	15	9.739638	10.260362	9.817553	10.182447	10.077915	9.922085	45	47
14	30	9.739686	10.260314	9.817622	10.182378	10.077935	9.922065	30	46
15	45	9.739734	10.260265	9.817691	10.182309	10.077956	9.922044	15	45
16	19	9.739783	10.260217	9.817759	10.182241	10.077977	9.922023	41	44
17	15	9.739831	10.260169	9.817828	10.182172	10.077998	9.922002	45	43
18	30	9.739879	10.260121	9.817897	10.182103	10.078018	9.921982	30	42
19	45	9.739927	10.260073	9.817966	10.182034	10.078039	9.921961	15	41
20	20	9.739975	10.260025	9.818035	10.181965	10.078060	9.921940	40	40
21	15	9.740023	10.259977	9.818103	10.181897	10.078081	9.921919	45	39
22	30	9.740071	10.259929	9.818172	10.181828	10.078101	9.921899	30	38
23	45	9.740119	10.259881	9.818241	10.181759	10.078122	9.921878	15	37
24	21	9.740167	10.259833	9.818310	10.181690	10.078143	9.921857	39	36
25	15	9.740215	10.259785	9.818379	10.181621	10.078164	9.921836	45	35
26	30	9.740263	10.259737	9.818447	10.181553	10.078185	9.921815	30	34
27	45	9.740311	10.259689	9.818516	10.181484	10.078205	9.921795	15	33
28	22	9.740359	10.259641	9.818585	10.181415	10.078226	9.921774	38	32
29	15	9.740407	10.259593	9.818654	10.181346	10.078247	9.921753	45	31
30	30	9.740455	10.259545	9.818722	10.181278	10.078268	9.921732	30	30
31	45	9.740502	10.259498	9.818791	10.181209	10.078289	9.921711	15	29
32	23	9.740550	10.259450	9.818860	10.181140	10.078309	9.921691	37	28
33	15	9.740598	10.259402	9.818929	10.181071	10.078330	9.921670	45	27
34	30	9.740646	10.259354	9.818997	10.181003	10.078351	9.921649	30	26
35	45	9.740694	10.259306	9.819066	10.180934	10.078372	9.921628	15	25
36	24	9.740742	10.259258	9.819135	10.180865	10.078393	9.921607	36	24
37	15	9.740790	10.259210	9.819203	10.180797	10.078414	9.921586	45	23
38	30	9.740838	10.259162	9.819272	10.180728	10.078434	9.921566	30	22
39	45	9.740886	10.259114	9.819341	10.180659	10.078455	9.921545	15	21
40	25	9.740934	10.259066	9.819410	10.180590	10.078476	9.921524	35	20
41	15	9.740981	10.259019	9.819478	10.180522	10.078497	9.921503	45	19
42	30	9.741029	10.258971	9.819547	10.180453	10.078518	9.921482	30	18
43	45	9.741077	10.258923	9.819616	10.180384	10.078539	9.921461	15	17
44	26	9.741125	10.258875	9.819684	10.180316	10.078559	9.921441	34	16
45	15	9.741173	10.258827	9.819753	10.180247	10.078580	9.921420	45	15
46	30	9.741221	10.258779	9.819822	10.180178	10.078601	9.921399	30	14
47	45	9.741268	10.258732	9.819890	10.180110	10.078622	9.921378	15	13
48	27	9.741316	10.258684	9.819959	10.180041	10.078643	9.921357	33	12
49	15	9.741364	10.258636	9.820028	10.179972	10.078664	9.921336	45	11
50	30	9.741412	10.258588	9.820096	10.179904	10.078685	9.921315	30	10
51	45	9.741460	10.258540	9.820165	10.179835	10.078705	9.921295	15	9
52	28	9.741507	10.258493	9.820234	10.179766	10.078726	9.921274	32	8
53	15	9.741555	10.258445	9.820302	10.179698	10.078747	9.921253	45	7
54	30	9.741603	10.258397	9.820371	10.179629	10.078768	9.921232	30	6
55	45	9.741651	10.258349	9.820440	10.179560	10.078789	9.921211	15	5
56	29	9.741699	10.258301	9.820508	10.179492	10.078810	9.921190	31	4
57	15	9.741746	10.258254	9.820577	10.179423	10.078831	9.921169	45	3
58	30	9.741794	10.258206	9.820646	10.179354	10.078852	9.921148	30	2
59	45	9.741842	10.258158	9.820714	10.179286	10.078873	9.921127	15	1
60	30	9.741889	10.258111	9.820783	10.179217	10.078893	9.921107	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 46 ^m .		LOG. SINES, &c.						56 deg.	

2 ^d 14 ^m .		LOG. SINES, &c. (t.)						33 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	9.741889	10.258111	9.820783	10.179217	10.078893	9.921107	30	60
1	15	9.741937	10.258063	9.820851	10.179149	10.078914	9.921086	45	59
2	30	9.741985	10.258015	9.820920	10.179080	10.078935	9.921065	30	58
3	45	9.742033	10.257967	9.820989	10.179011	10.078956	9.921044	15	57
4	31	9.742080	10.257920	9.821057	10.178943	10.078977	9.921023	29	56
5	15	9.742128	10.257872	9.821126	10.178874	10.078998	9.921002	45	55
6	30	9.742176	10.257824	9.821195	10.178805	10.079019	9.920981	30	54
7	45	9.742223	10.257777	9.821263	10.178737	10.079040	9.920960	15	53
8	32	9.742271	10.257729	9.821332	10.178668	10.079061	9.920939	28	52
9	15	9.742319	10.257681	9.821400	10.178600	10.079082	9.920918	45	51
10	30	9.742366	10.257634	9.821469	10.178531	10.079103	9.920897	30	50
11	45	9.742414	10.257586	9.821537	10.178463	10.079124	9.920876	15	49
12	33	9.742462	10.257538	9.821606	10.178394	10.079145	9.920855	27	48
13	15	9.742509	10.257491	9.821675	10.178325	10.079165	9.920835	45	47
14	30	9.742557	10.257443	9.821743	10.178257	10.079186	9.920814	30	46
15	45	9.742604	10.257396	9.821812	10.178188	10.079207	9.920793	15	45
16	34	9.742652	10.257348	9.821880	10.178120	10.079228	9.920772	26	44
17	15	9.742700	10.257300	9.821949	10.178051	10.079249	9.920751	45	43
18	30	9.742747	10.257253	9.822017	10.177983	10.079270	9.920730	30	42
19	45	9.742795	10.257205	9.822086	10.177914	10.079291	9.920709	15	41
20	35	9.742842	10.257158	9.822154	10.177846	10.079312	9.920688	25	40
21	15	9.742890	10.257110	9.822223	10.177777	10.079333	9.920667	45	39
22	30	9.742937	10.257063	9.822291	10.177709	10.079354	9.920646	30	38
23	45	9.742985	10.257015	9.822360	10.177640	10.079375	9.920625	15	37
24	36	9.743032	10.256968	9.822429	10.177571	10.079396	9.920604	24	36
25	15	9.743080	10.256920	9.822497	10.177503	10.079417	9.920583	45	35
26	30	9.743128	10.256872	9.822566	10.177434	10.079438	9.920562	30	34
27	45	9.743175	10.256825	9.822634	10.177366	10.079459	9.920541	15	33
28	37	9.743223	10.256777	9.822703	10.177297	10.079480	9.920520	23	32
29	15	9.743270	10.256730	9.822771	10.177229	10.079501	9.920499	45	31
30	30	9.743318	10.256682	9.822840	10.177160	10.079522	9.920478	30	30
31	45	9.743365	10.256635	9.822908	10.177092	10.079543	9.920457	15	29
32	38	9.743413	10.256587	9.822977	10.177023	10.079564	9.920436	22	28
33	15	9.743460	10.256540	9.823045	10.176955	10.079585	9.920415	45	27
34	30	9.743507	10.256493	9.823114	10.176886	10.079606	9.920394	30	26
35	45	9.743555	10.256445	9.823182	10.176818	10.079627	9.920373	15	25
36	39	9.743602	10.256398	9.823250	10.176750	10.079648	9.920352	21	24
37	15	9.743650	10.256350	9.823319	10.176681	10.079669	9.920331	45	23
38	30	9.743697	10.256303	9.823387	10.176613	10.079690	9.920310	30	22
39	45	9.743745	10.256255	9.823456	10.176544	10.079711	9.920289	15	21
40	40	9.743792	10.256208	9.823524	10.176476	10.079732	9.920268	20	20
41	15	9.743840	10.256160	9.823593	10.176407	10.079753	9.920247	45	19
42	30	9.743887	10.256113	9.823661	10.176339	10.079774	9.920226	30	18
43	45	9.743934	10.256066	9.823730	10.176270	10.079795	9.920205	15	17
44	41	9.743982	10.256018	9.823798	10.176202	10.079816	9.920184	19	16
45	15	9.744029	10.255971	9.823867	10.176133	10.079837	9.920163	45	15
46	30	9.744076	10.255924	9.823935	10.176065	10.079859	9.920141	30	14
47	45	9.744124	10.255876	9.824003	10.175997	10.079880	9.920120	15	13
48	42	9.744171	10.255829	9.824072	10.175928	10.079901	9.920099	18	12
49	15	9.744219	10.255781	9.824140	10.175860	10.079922	9.920078	45	11
50	30	9.744266	10.255734	9.824209	10.175791	10.079943	9.920057	30	10
51	45	9.744313	10.255687	9.824277	10.175723	10.079964	9.920036	15	9
52	43	9.744361	10.255639	9.824345	10.175655	10.079985	9.920015	17	8
53	15	9.744408	10.255592	9.824414	10.175586	10.080006	9.919994	45	7
54	30	9.744455	10.255545	9.824482	10.175518	10.080027	9.919973	30	6
55	45	9.744502	10.255498	9.824551	10.175449	10.080048	9.919952	15	5
56	44	9.744550	10.255450	9.824619	10.175381	10.080069	9.919931	16	4
57	15	9.744597	10.255403	9.824687	10.175313	10.080090	9.919910	45	3
58	30	9.744644	10.255356	9.824756	10.175244	10.080111	9.919889	30	2
59	45	9.744692	10.255308	9.824824	10.175176	10.080133	9.919867	15	1
60	45	9.744739	10.255261	9.824893	10.175107	10.080154	9.919846	15	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^d 45 ^m .		LOG. SINES, &c.						56 deg	

2 ^h 15 ^m		LOG. SINES, &c. (t.)						33 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.744739	10.255261	9.824893	10.175107	10.080154	9.919846	15	60
1	15	9.744786	10.255214	9.824961	10.175039	10.080175	9.919825	45	59
2	30	9.744833	10.255167	9.825029	10.174971	10.080196	9.919804	30	58
3	45	9.744881	10.255119	9.825098	10.174903	10.080217	9.919783	15	57
4	46	9.744928	10.255072	9.825166	10.174834	10.080238	9.919762	14	56
5	15	9.744975	10.255025	9.825234	10.174766	10.080259	9.919741	45	55
6	30	9.745022	10.254978	9.825303	10.174697	10.080280	9.919720	30	54
7	45	9.745070	10.254930	9.825371	10.174629	10.080301	9.919699	15	53
8	47	9.745117	10.254883	9.825439	10.174561	10.080323	9.919677	13	52
9	15	9.745164	10.254836	9.825508	10.174492	10.080344	9.919656	45	51
10	30	9.745211	10.254789	9.825576	10.174424	10.080365	9.919635	30	50
11	45	9.745258	10.254742	9.825644	10.174356	10.080386	9.919614	15	49
12	48	9.745306	10.254694	9.825713	10.174287	10.080407	9.919593	12	48
13	15	9.745353	10.254647	9.825781	10.174219	10.080428	9.919572	45	47
14	30	9.745400	10.254600	9.825849	10.174151	10.080449	9.919551	30	46
15	45	9.745447	10.254553	9.825918	10.174082	10.080471	9.919530	15	45
16	49	9.745494	10.254506	9.825986	10.174014	10.080492	9.919508	11	44
17	15	9.745541	10.254459	9.826054	10.173946	10.080513	9.919487	45	43
18	30	9.745589	10.254411	9.826123	10.173877	10.080534	9.919466	30	42
19	45	9.745636	10.254364	9.826191	10.173809	10.080555	9.919445	15	41
20	50	9.745683	10.254317	9.826259	10.173741	10.080576	9.919424	10	40
21	15	9.745730	10.254270	9.826327	10.173673	10.080598	9.919402	45	39
22	30	9.745777	10.254223	9.826396	10.173604	10.080619	9.919381	30	38
23	45	9.745824	10.254176	9.826464	10.173536	10.080640	9.919360	15	37
24	51	9.745871	10.254129	9.826532	10.173468	10.080661	9.919339	9	36
25	15	9.745918	10.254082	9.826601	10.173399	10.080682	9.919318	45	35
26	30	9.745965	10.254035	9.826669	10.173331	10.080703	9.919297	30	34
27	45	9.746012	10.253988	9.826737	10.173263	10.080725	9.919275	15	33
28	52	9.746059	10.253941	9.826805	10.173195	10.080746	9.919254	8	32
29	15	9.746107	10.253893	9.826874	10.173126	10.080767	9.919233	45	31
30	30	9.746154	10.253846	9.826942	10.173058	10.080788	9.919212	30	30
31	45	9.746201	10.253799	9.827010	10.172990	10.080809	9.919191	15	29
32	53	9.746248	10.253752	9.827078	10.172922	10.080831	9.919169	7	28
33	15	9.746295	10.253705	9.827147	10.172853	10.080852	9.919148	45	27
34	30	9.746342	10.253658	9.827215	10.172785	10.080873	9.919127	30	26
35	45	9.746389	10.253611	9.827283	10.172717	10.080894	9.919106	15	25
36	54	9.746436	10.253564	9.827351	10.172649	10.080916	9.919084	6	24
37	15	9.746483	10.253517	9.827419	10.172581	10.080937	9.919063	45	23
38	30	9.746530	10.253470	9.827488	10.172512	10.080958	9.919042	30	22
39	45	9.746577	10.253423	9.827556	10.172444	10.080979	9.919021	15	21
40	55	9.746624	10.253376	9.827624	10.172376	10.081000	9.919000	5	20
41	15	9.746671	10.253329	9.827692	10.172308	10.081022	9.918978	45	19
42	30	9.746718	10.253282	9.827760	10.172240	10.081043	9.918957	30	18
43	45	9.746765	10.253235	9.827829	10.172171	10.081064	9.918936	15	17
44	56	9.746811	10.253189	9.827897	10.172103	10.081085	9.918915	4	16
45	15	9.746858	10.253142	9.827965	10.172035	10.081107	9.918893	45	15
46	30	9.746905	10.253095	9.828033	10.171967	10.081128	9.918872	30	14
47	45	9.746952	10.253048	9.828101	10.171899	10.081149	9.918851	15	13
48	57	9.746999	10.253001	9.828170	10.171830	10.081170	9.918830	3	12
49	15	9.747046	10.252954	9.828238	10.171762	10.081192	9.918808	45	11
50	30	9.747093	10.252907	9.828306	10.171694	10.081213	9.918787	30	10
51	45	9.747140	10.252860	9.828374	10.171626	10.081234	9.918766	15	9
52	58	9.747187	10.252813	9.828442	10.171558	10.081256	9.918744	2	8
53	15	9.747234	10.252766	9.828510	10.171490	10.081277	9.918723	45	7
54	30	9.747281	10.252719	9.828579	10.171421	10.081298	9.918702	30	6
55	45	9.747327	10.252673	9.828647	10.171353	10.081319	9.918681	15	5
56	59	9.747374	10.252626	9.828715	10.171285	10.081341	9.918659	1	4
57	15	9.747421	10.252579	9.828783	10.171217	10.081362	9.918638	45	3
58	30	9.747468	10.252532	9.828851	10.171149	10.081383	9.918617	30	2
59	45	9.747515	10.252485	9.828919	10.171081	10.081405	9.918595	15	1
60	60	9.747562	10.252438	9.828987	10.171013	10.081426	9.918574	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 44 ^m		LOG. SINES, &c.						56 deg.	

2 ^h 16 ^m .		LOG. SINES, &c. (t.)						34 deg.		
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"	sec.
0	0	9.747562	10.252438	9.828987	10.171013	10.081426	9.918574	60		60
1	15	9.747608	10.252392	9.829056	10.170944	10.081447	9.918553	45		59
2	30	9.747655	10.252345	9.829124	10.170876	10.081468	9.918532	30		58
3	45	9.747702	10.252298	9.829192	10.170808	10.081490	9.918510	15		57
4	1	9.747749	10.252251	9.829260	10.170740	10.081511	9.918489		59	56
5	15	9.747796	10.252204	9.829328	10.170672	10.081532	9.918468	45		55
6	30	9.747842	10.252158	9.829396	10.170604	10.081554	9.918446	30		54
7	45	9.747889	10.252111	9.829464	10.170536	10.081575	9.918425	15		53
8	2	9.747936	10.252064	9.829532	10.170468	10.081596	9.918404		58	52
9	15	9.747983	10.252017	9.829600	10.170400	10.081618	9.918382	45		51
10	30	9.748029	10.251971	9.829668	10.170332	10.081639	9.918361	30		50
11	45	9.748076	10.251924	9.829737	10.170263	10.081660	9.918340	15		49
12	3	9.748123	10.251877	9.829805	10.170195	10.081682	9.918318		57	48
13	15	9.748170	10.251830	9.829873	10.170127	10.081703	9.918297	45		47
14	30	9.748216	10.251784	9.829941	10.170059	10.081724	9.918276	30		46
15	45	9.748263	10.251737	9.830009	10.169991	10.081746	9.918254	15		45
16	4	9.748310	10.251690	9.830077	10.169923	10.081767	9.918233		56	44
17	15	9.748357	10.251643	9.830145	10.169855	10.081788	9.918212	45		43
18	30	9.748403	10.251597	9.830213	10.169787	10.081810	9.918190	30		42
19	45	9.748450	10.251550	9.830281	10.169719	10.081831	9.918169	15		41
20	5	9.748497	10.251503	9.830349	10.169651	10.081853	9.918147		55	40
21	15	9.748543	10.251457	9.830417	10.169583	10.081874	9.918126	45		39
22	30	9.748590	10.251410	9.830485	10.169515	10.081895	9.918105	30		38
23	45	9.748637	10.251363	9.830553	10.169447	10.081917	9.918083	15		37
24	6	9.748683	10.251317	9.830621	10.169379	10.081938	9.918062		54	36
25	15	9.748730	10.251270	9.830689	10.169311	10.081959	9.918041	45		35
26	30	9.748777	10.251223	9.830757	10.169243	10.081981	9.918019	30		34
27	45	9.748823	10.251177	9.830825	10.169175	10.082002	9.917998	15		33
28	7	9.748870	10.251130	9.830893	10.169107	10.082024	9.917976		53	32
29	15	9.748916	10.251084	9.830961	10.169039	10.082045	9.917955	45		31
30	30	9.748963	10.251037	9.831029	10.168971	10.082066	9.917934	30		30
31	45	9.749010	10.250990	9.831097	10.168903	10.082088	9.917912	15		29
32	8	9.749056	10.250944	9.831165	10.168835	10.082109	9.917891		52	28
33	15	9.749103	10.250897	9.831233	10.168767	10.082131	9.917869	45		27
34	30	9.749149	10.250851	9.831301	10.168699	10.082152	9.917848	30		26
35	45	9.749196	10.250804	9.831369	10.168631	10.082173	9.917827	15		25
36	9	9.749242	10.250758	9.831437	10.168563	10.082195	9.917805		51	24
37	15	9.749289	10.250711	9.831505	10.168495	10.082216	9.917784	45		23
38	30	9.749336	10.250664	9.831573	10.168427	10.082238	9.917762	30		22
39	45	9.749382	10.250618	9.831641	10.168359	10.082259	9.917741	15		21
40	10	9.749429	10.250571	9.831709	10.168291	10.082281	9.917719		50	20
41	15	9.749475	10.250525	9.831777	10.168223	10.082302	9.917698	45		19
42	30	9.749522	10.250478	9.831845	10.168155	10.082324	9.917676	30		18
43	45	9.749568	10.250432	9.831913	10.168087	10.082345	9.917655	15		17
44	11	9.749615	10.250385	9.831981	10.168019	10.082366	9.917634		49	16
45	15	9.749661	10.250339	9.832049	10.167951	10.082388	9.917612	45		15
46	30	9.749708	10.250292	9.832117	10.167883	10.082409	9.917591	30		14
47	45	9.749754	10.250246	9.832185	10.167815	10.082431	9.917569	15		13
48	12	9.749801	10.250199	9.832253	10.167747	10.082452	9.917548		48	12
49	15	9.749847	10.250153	9.832321	10.167679	10.082474	9.917526	45		11
50	30	9.749894	10.250106	9.832389	10.167611	10.082495	9.917505	30		10
51	45	9.749940	10.250060	9.832457	10.167543	10.082517	9.917483	15		9
52	13	9.749987	10.250013	9.832525	10.167475	10.082538	9.917462		47	8
53	15	9.750033	10.249967	9.832593	10.167407	10.082560	9.917440	45		7
54	30	9.750079	10.249921	9.832660	10.167340	10.082581	9.917419	30		6
55	45	9.750126	10.249874	9.832728	10.167272	10.082603	9.917397	15		5
56	14	9.750172	10.249828	9.832796	10.167204	10.082624	9.917376		46	4
57	15	9.750219	10.249781	9.832864	10.167136	10.082646	9.917354	45		3
58	30	9.750265	10.249735	9.832932	10.167068	10.082667	9.917333	30		2
59	45	9.750311	10.249689	9.833000	10.167000	10.082689	9.917311	15		1
60	15	9.750358	10.249642	9.833068	10.166932	10.082710	9.917290		45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"	sec.
3 ^h 43 ^m .		LOG. SINES, &c.						55 deg.		

2 ^h 17 ^m .		LOG. SINES, &c. (L.)						34 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	
0	15	9.750358	10.249642	9.833068	10.166932	10.082710	9.917290		45
1	15	9.750404	10.249596	9.833136	10.166864	10.082732	9.917268		45
2	30	9.750451	10.249549	9.833204	10.166796	10.082753	9.917247		30
3	45	9.750497	10.249503	9.833271	10.166729	10.082775	9.917225		15
4	16	9.750543	10.249457	9.833339	10.166661	10.082796	9.917204		44
5	15	9.750590	10.249410	9.833407	10.166593	10.082818	9.917182		45
6	30	9.750636	10.249364	9.833475	10.166525	10.082839	9.917161		30
7	45	9.750682	10.249318	9.833543	10.166457	10.082861	9.917139		15
8	17	9.750729	10.249271	9.833611	10.166389	10.082882	9.917118		43
9	15	9.750775	10.249225	9.833679	10.166321	10.082904	9.917096		45
10	30	9.750821	10.249179	9.833747	10.166253	10.082925	9.917075		30
11	45	9.750868	10.249132	9.833814	10.166186	10.082947	9.917053		15
12	18	9.750914	10.249086	9.833882	10.166118	10.082968	9.917032		42
13	15	9.750960	10.249040	9.833950	10.166050	10.082990	9.917010		45
14	30	9.751007	10.248993	9.834018	10.165982	10.083011	9.916989		30
15	45	9.751053	10.248947	9.834086	10.165914	10.083033	9.916967		15
16	19	9.751099	10.248901	9.834154	10.165846	10.083055	9.916945		41
17	15	9.751145	10.248855	9.834221	10.165779	10.083076	9.916924		45
18	30	9.751192	10.248808	9.834289	10.165711	10.083098	9.916902		30
19	45	9.751238	10.248762	9.834357	10.165643	10.083119	9.916881		15
20	20	9.751284	10.248716	9.834425	10.165575	10.083141	9.916859		40
21	15	9.751330	10.248670	9.834493	10.165507	10.083162	9.916838		45
22	30	9.751377	10.248623	9.834560	10.165440	10.083184	9.916816		30
23	45	9.751423	10.248577	9.834628	10.165372	10.083206	9.916794		15
24	21	9.751469	10.248531	9.834696	10.165304	10.083227	9.916773		39
25	15	9.751515	10.248485	9.834764	10.165236	10.083249	9.916751		45
26	30	9.751561	10.248439	9.834832	10.165168	10.083270	9.916730		30
27	45	9.751608	10.248392	9.834899	10.165101	10.083292	9.916708		15
28	22	9.751654	10.248346	9.834967	10.165033	10.083313	9.916687		38
29	15	9.751700	10.248300	9.835035	10.164965	10.083335	9.916665		45
30	30	9.751746	10.248254	9.835103	10.164897	10.083357	9.916643		30
31	45	9.751792	10.248208	9.835171	10.164829	10.083378	9.916622		15
32	23	9.751838	10.248162	9.835238	10.164762	10.083400	9.916600		37
33	15	9.751885	10.248115	9.835306	10.164694	10.083421	9.916579		45
34	30	9.751931	10.248069	9.835374	10.164626	10.083443	9.916557		30
35	45	9.751977	10.248023	9.835442	10.164558	10.083465	9.916535		15
36	24	9.752023	10.247977	9.835509	10.164491	10.083486	9.916514		36
37	15	9.752069	10.247931	9.835577	10.164423	10.083508	9.916492		45
38	30	9.752115	10.247885	9.835645	10.164355	10.083530	9.916470		30
39	45	9.752161	10.247839	9.835713	10.164287	10.083551	9.916449		15
40	25	9.752207	10.247793	9.835780	10.164220	10.083573	9.916427		35
41	15	9.752254	10.247746	9.835848	10.164152	10.083595	9.916405		45
42	30	9.752300	10.247700	9.835916	10.164084	10.083616	9.916384		30
43	45	9.752346	10.247654	9.835984	10.164016	10.083638	9.916362		15
44	26	9.752392	10.247608	9.836051	10.163949	10.083659	9.916341		34
45	15	9.752438	10.247562	9.836119	10.163881	10.083681	9.916319		45
46	30	9.752484	10.247516	9.836187	10.163813	10.083703	9.916297		30
47	45	9.752530	10.247470	9.836254	10.163746	10.083724	9.916276		15
48	27	9.752576	10.247424	9.836322	10.163678	10.083746	9.916254		33
49	15	9.752622	10.247378	9.836390	10.163610	10.083768	9.916232		45
50	30	9.752668	10.247332	9.836457	10.163543	10.083789	9.916211		30
51	45	9.752714	10.247286	9.836525	10.163475	10.083811	9.916189		15
52	28	9.752760	10.247240	9.836593	10.163407	10.083833	9.916167		32
53	15	9.752806	10.247194	9.836661	10.163339	10.083854	9.916146		45
54	30	9.752852	10.247148	9.836728	10.163272	10.083876	9.916124		30
55	45	9.752898	10.247102	9.836796	10.163204	10.083898	9.916102		15
56	29	9.752944	10.247056	9.836864	10.163136	10.083920	9.916080		31
57	15	9.752990	10.247010	9.836931	10.163069	10.083941	9.916059		45
58	30	9.753036	10.246964	9.836999	10.163001	10.083963	9.916037		30
59	45	9.753082	10.246918	9.837067	10.162933	10.083985	9.916015		15
60	30	9.753128	10.246872	9.837134	10.162866	10.084006	9.915994		30
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	
3 ^h 42 ^m .		LOG. SINES, &c.						55 deg.	

3° 18'		LOG. SINES, &c. (t.)						34 deg.	
' "		sine.	coscant.	tangrnt.	cotangent.	secant.	cosine.	' "	sec.
30		9.753128	10.246872	9.837134	10.162866	10.084006	9.915994	30	60
15		9.753174	10.246826	9.837202	10.162798	10.084028	9.915972	45	59
30		9.753220	10.246780	9.837270	10.162730	10.084050	9.915950	30	58
45		9.753266	10.246734	9.837337	10.162663	10.084071	9.915929	15	57
31		9.753312	10.246688	9.837405	10.162595	10.084093	9.915907	29	56
15		9.753358	10.246642	9.837473	10.162527	10.084115	9.915885	45	55
30		9.753404	10.246596	9.837540	10.162460	10.084137	9.915863	30	54
45		9.753449	10.246551	9.837608	10.162392	10.084158	9.915842	15	53
32		9.753496	10.246505	9.837675	10.162325	10.084180	9.915820	28	52
15		9.753541	10.246459	9.837743	10.162257	10.084202	9.915798	45	51
30		9.753587	10.246413	9.837811	10.162189	10.084224	9.915776	30	50
45		9.753633	10.246367	9.837878	10.162122	10.084245	9.915755	15	49
33		9.753679	10.246321	9.837946	10.162054	10.084267	9.915733	27	48
15		9.753725	10.246275	9.838014	10.161986	10.084289	9.915711	45	47
30		9.753771	10.246229	9.838081	10.161919	10.084311	9.915689	30	46
45		9.753816	10.246184	9.838149	10.161851	10.084332	9.915668	15	45
34		9.753862	10.246138	9.838216	10.161784	10.084354	9.915646	26	44
15		9.753908	10.246092	9.838284	10.161716	10.084376	9.915624	45	43
30		9.753954	10.246046	9.838352	10.161648	10.084398	9.915602	30	42
45		9.754000	10.246000	9.838419	10.161581	10.084419	9.915581	15	41
35		9.754046	10.245954	9.838487	10.161513	10.084441	9.915559	25	40
15		9.754091	10.245909	9.838554	10.161446	10.084463	9.915537	45	39
30		9.754137	10.245863	9.838622	10.161378	10.084485	9.915515	30	38
45		9.754183	10.245817	9.838689	10.161311	10.084506	9.915494	15	37
36		9.754229	10.245771	9.838757	10.161243	10.084528	9.915472	24	36
15		9.754275	10.245725	9.838825	10.161175	10.084550	9.915450	45	35
30		9.754320	10.245680	9.838892	10.161108	10.084572	9.915428	30	34
45		9.754366	10.245634	9.838960	10.161040	10.084594	9.915406	15	33
37		9.754412	10.245588	9.839027	10.160973	10.084615	9.915385	23	32
15		9.754458	10.245542	9.839095	10.160905	10.084637	9.915363	45	31
30		9.754503	10.245497	9.839162	10.160838	10.084659	9.915341	30	30
45		9.754549	10.245451	9.839230	10.160770	10.084681	9.915319	15	29
38		9.754595	10.245405	9.839297	10.160703	10.084703	9.915297	22	28
15		9.754641	10.245359	9.839365	10.160635	10.084724	9.915276	45	27
30		9.754686	10.245314	9.839433	10.160567	10.084746	9.915254	30	26
45		9.754732	10.245268	9.839500	10.160500	10.084768	9.915232	15	25
39		9.754778	10.245222	9.839568	10.160432	10.084790	9.915210	21	24
15		9.754823	10.245177	9.839635	10.160365	10.084812	9.915188	45	23
30		9.754869	10.245131	9.839703	10.160297	10.084834	9.915166	30	22
45		9.754915	10.245085	9.839770	10.160230	10.084855	9.915145	15	21
40		9.754960	10.245040	9.839838	10.160162	10.084877	9.915123	20	20
15		9.755006	10.244994	9.839905	10.160095	10.084899	9.915101	45	19
30		9.755052	10.244948	9.839973	10.160027	10.084921	9.915079	30	18
45		9.755097	10.244903	9.840040	10.159960	10.084943	9.915057	15	17
41		9.755143	10.244857	9.840108	10.159892	10.084965	9.915035	19	16
15		9.755189	10.244811	9.840175	10.159825	10.084987	9.915013	45	15
30		9.755234	10.244766	9.840243	10.159757	10.085008	9.914992	30	14
45		9.755280	10.244720	9.840310	10.159690	10.085030	9.914970	15	13
42		9.755326	10.244674	9.840378	10.159622	10.085052	9.914948	18	12
15		9.755371	10.244629	9.840445	10.159555	10.085074	9.914926	45	11
30		9.755417	10.244583	9.840513	10.159487	10.085096	9.914904	30	10
45		9.755462	10.244538	9.840580	10.159420	10.085118	9.914882	15	9
43		9.755508	10.244492	9.840647	10.159353	10.085140	9.914860	17	8
15		9.755553	10.244447	9.840715	10.159285	10.085162	9.914838	45	7
30		9.755599	10.244401	9.840782	10.159218	10.085183	9.914817	30	6
45		9.755645	10.244355	9.840850	10.159150	10.085205	9.914795	15	5
44		9.755690	10.244310	9.840917	10.159083	10.085227	9.914773	16	4
15		9.755736	10.244264	9.840985	10.159015	10.085249	9.914751	45	3
30		9.755781	10.244219	9.841052	10.158948	10.085271	9.914729	30	2
45		9.755827	10.244173	9.841120	10.158880	10.085293	9.914707	15	1
45		9.755872	10.244128	9.841187	10.158813	10.085315	9.914685	15	0
' "		cosine.	secant.	cotangent.	tangent.	coscant.	sine.	' "	sec.
3° 41'		LOG. SINES, &c.						55 deg.	

2° 19'.		LOG. SINES, &c. (1.)						84 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.755872	10.244128	9.841187	10.158813	10.085315	9.914685	15	60
1	15	9.755910	10.244082	9.841255	10.158745	10.085337	9.914663	45	59
2	30	9.755963	10.244037	9.841322	10.158678	10.085359	9.914641	30	58
3	45	9.756009	10.243991	9.841389	10.158611	10.085381	9.914619	15	57
4	46	9.756054	10.243946	9.841457	10.158543	10.085402	9.914598	14	56
5	15	9.756100	10.243900	9.841524	10.158476	10.085424	9.914576	45	55
6	30	9.756145	10.243855	9.841592	10.158408	10.085446	9.914554	30	54
7	45	9.756191	10.243809	9.841659	10.158341	10.085468	9.914532	15	53
8	47	9.756236	10.243764	9.841726	10.158274	10.085490	9.914510	13	52
9	15	9.756282	10.243718	9.841794	10.158206	10.085512	9.914488	45	51
10	30	9.756327	10.243673	9.841861	10.158139	10.085534	9.914466	30	50
11	45	9.756373	10.243627	9.841929	10.158071	10.085556	9.914444	15	49
12	48	9.756418	10.243582	9.841996	10.158004	10.085578	9.914422	12	48
13	15	9.756464	10.243536	9.842063	10.157937	10.085600	9.914400	45	47
14	30	9.756509	10.243491	9.842131	10.157869	10.085622	9.914378	30	46
15	45	9.756554	10.243446	9.842198	10.157802	10.085644	9.914356	15	45
16	49	9.756600	10.243400	9.842266	10.157734	10.085666	9.914334	11	44
17	15	9.756645	10.243355	9.842333	10.157667	10.085688	9.914312	45	43
18	30	9.756691	10.243309	9.842400	10.157600	10.085710	9.914290	30	42
19	45	9.756736	10.243264	9.842468	10.157532	10.085732	9.914268	15	41
20	50	9.756781	10.243219	9.842535	10.157465	10.085754	9.914246	10	40
21	15	9.756827	10.243173	9.842602	10.157398	10.085776	9.914224	45	39
22	30	9.756872	10.243128	9.842670	10.157330	10.085798	9.914202	30	38
23	45	9.756918	10.243082	9.842737	10.157263	10.085820	9.914180	15	37
24	51	9.756963	10.243037	9.842805	10.157195	10.085842	9.914158	9	36
25	15	9.757008	10.242992	9.842872	10.157128	10.085864	9.914136	45	35
26	30	9.757054	10.242946	9.842939	10.157061	10.085886	9.914114	30	34
27	45	9.757099	10.242901	9.843007	10.156993	10.085908	9.914092	15	33
28	52	9.757144	10.242856	9.843074	10.156926	10.085930	9.914070	8	32
29	15	9.757190	10.242810	9.843141	10.156859	10.085952	9.914048	45	31
30	30	9.757235	10.242765	9.843209	10.156791	10.085974	9.914026	30	30
31	45	9.757280	10.242720	9.843276	10.156724	10.085996	9.914004	15	29
32	53	9.757326	10.242674	9.843343	10.156657	10.086018	9.913982	7	28
33	15	9.757371	10.242629	9.843411	10.156589	10.086040	9.913960	45	27
34	30	9.757416	10.242584	9.843478	10.156522	10.086062	9.913938	30	26
35	45	9.757461	10.242539	9.843545	10.156455	10.086084	9.913916	15	25
36	54	9.757507	10.242493	9.843612	10.156388	10.086106	9.913894	6	24
37	15	9.757552	10.242448	9.843680	10.156320	10.086128	9.913872	45	23
38	30	9.757597	10.242403	9.843747	10.156253	10.086150	9.913850	30	22
39	45	9.757643	10.242357	9.843814	10.156186	10.086172	9.913828	15	21
40	55	9.757688	10.242312	9.843882	10.156118	10.086194	9.913806	5	20
41	15	9.757733	10.242267	9.843949	10.156051	10.086216	9.913784	45	19
42	30	9.757778	10.242222	9.844016	10.155984	10.086238	9.913762	30	18
43	45	9.757823	10.242177	9.844083	10.155917	10.086260	9.913740	15	17
44	56	9.757869	10.242131	9.844151	10.155849	10.086282	9.913718	4	16
45	15	9.757914	10.242086	9.844218	10.155782	10.086304	9.913696	45	15
46	30	9.757959	10.242041	9.844285	10.155715	10.086326	9.913674	30	14
47	45	9.758004	10.241996	9.844353	10.155647	10.086348	9.913652	15	13
48	57	9.758049	10.241951	9.844420	10.155580	10.086370	9.913630	3	12
49	15	9.758095	10.241905	9.844487	10.155513	10.086392	9.913608	45	11
50	30	9.758140	10.241860	9.844554	10.155446	10.086415	9.913586	30	10
51	45	9.758185	10.241815	9.844622	10.155378	10.086437	9.913563	15	9
52	58	9.758230	10.241770	9.844689	10.155311	10.086459	9.913541	2	8
53	15	9.758275	10.241725	9.844756	10.155244	10.086481	9.913519	45	7
54	30	9.758320	10.241680	9.844823	10.155177	10.086503	9.913497	30	6
55	45	9.758366	10.241634	9.844891	10.155109	10.086525	9.913475	15	5
56	59	9.758411	10.241589	9.844958	10.155042	10.086547	9.913453	1	4
57	15	9.758456	10.241544	9.845025	10.154975	10.086569	9.913431	45	3
58	30	9.758501	10.241499	9.845092	10.154908	10.086591	9.913409	30	2
59	45	9.758546	10.241454	9.845160	10.154840	10.086613	9.913387	15	1
60	60	9.758591	10.241409	9.845227	10.154773	10.086636	9.913364	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3° 40'.		LOG. SINES, &c.						55 deg.	

20°		LOG. SINES, &c. (L.)						35 deg	
	#	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.		sec.
	0	9.758591	10.241409	9.845227	10.154773	10.086636	9.913364	60	60
	15	9.758636	10.241364	9.845294	10.154706	10.086658	9.913342	45	59
	30	9.758681	10.241319	9.845361	10.154639	10.086680	9.913320	30	58
	45	9.758727	10.241273	9.845428	10.154572	10.086702	9.913298	15	57
	1	9.758772	10.241228	9.845496	10.154504	10.086724	9.913276	59	56
	15	9.758817	10.241183	9.845563	10.154437	10.086746	9.913254	45	55
	30	9.758862	10.241138	9.845630	10.154370	10.086768	9.913232	30	54
	45	9.758907	10.241093	9.845697	10.154303	10.086790	9.913210	15	53
	2	9.758952	10.241048	9.845764	10.154236	10.086813	9.913187	58	52
	15	9.758997	10.241003	9.845832	10.154168	10.086835	9.913165	45	51
	30	9.759042	10.240958	9.845899	10.154101	10.086857	9.913143	30	50
	45	9.759087	10.240913	9.845966	10.154034	10.086879	9.913121	15	49
	3	9.759132	10.240868	9.846033	10.153967	10.086901	9.913099	57	48
	15	9.759177	10.240823	9.846100	10.153900	10.086923	9.913077	45	47
	30	9.759222	10.240778	9.846167	10.153833	10.086945	9.913055	30	46
	45	9.759267	10.240733	9.846235	10.153765	10.086968	9.913032	15	45
	4	9.759312	10.240688	9.846302	10.153698	10.086990	9.913010	56	44
	15	9.759357	10.240643	9.846369	10.153631	10.087012	9.912988	45	43
	30	9.759402	10.240598	9.846436	10.153564	10.087034	9.912966	30	42
	45	9.759447	10.240553	9.846503	10.153497	10.087056	9.912944	15	41
	5	9.759492	10.240508	9.846570	10.153430	10.087079	9.912921	55	40
	15	9.759537	10.240463	9.846638	10.153362	10.087101	9.912899	45	39
	30	9.759582	10.240418	9.846705	10.153295	10.087123	9.912877	30	38
	45	9.759627	10.240373	9.846772	10.153228	10.087145	9.912855	15	37
	6	9.759672	10.240328	9.846839	10.153161	10.087167	9.912833	54	36
	15	9.759717	10.240283	9.846906	10.153094	10.087189	9.912811	45	35
	30	9.759762	10.240238	9.846973	10.153027	10.087212	9.912788	30	34
	45	9.759807	10.240193	9.847040	10.152960	10.087234	9.912766	15	33
	7	9.759851	10.240149	9.847107	10.152893	10.087256	9.912744	53	32
	15	9.759896	10.240104	9.847175	10.152825	10.087278	9.912722	45	31
	30	9.759941	10.240059	9.847242	10.152758	10.087301	9.912699	30	30
	45	9.759986	10.240014	9.847309	10.152691	10.087323	9.912677	15	29
	8	9.760031	10.239969	9.847376	10.152624	10.087345	9.912655	52	28
	15	9.760076	10.239924	9.847443	10.152557	10.087367	9.912633	45	27
	30	9.760121	10.239879	9.847510	10.152490	10.087389	9.912611	30	26
	45	9.760166	10.239834	9.847577	10.152423	10.087412	9.912588	15	25
	9	9.760211	10.239789	9.847644	10.152356	10.087434	9.912566	51	24
	15	9.760255	10.239745	9.847711	10.152289	10.087456	9.912544	45	23
	30	9.760300	10.239700	9.847779	10.152221	10.087478	9.912522	30	22
	45	9.760345	10.239655	9.847846	10.152154	10.087501	9.912499	15	21
	10	9.760390	10.239610	9.847913	10.152087	10.087523	9.912477	50	20
	15	9.760435	10.239565	9.847980	10.152020	10.087545	9.912455	45	19
	30	9.760480	10.239520	9.848047	10.151953	10.087567	9.912433	30	18
	45	9.760524	10.239476	9.848114	10.151886	10.087590	9.912410	15	17
	11	9.760569	10.239431	9.848181	10.151819	10.087612	9.912388	49	16
	15	9.760614	10.239386	9.848248	10.151752	10.087634	9.912366	45	15
	30	9.760659	10.239341	9.848315	10.151685	10.087656	9.912344	30	14
	45	9.760703	10.239297	9.848382	10.151618	10.087679	9.912321	15	13
	12	9.760748	10.239252	9.848449	10.151551	10.087701	9.912299	48	12
	15	9.760793	10.239207	9.848516	10.151484	10.087723	9.912277	45	11
	30	9.760838	10.239162	9.848583	10.151417	10.087746	9.912254	30	10
	45	9.760883	10.239117	9.848650	10.151350	10.087768	9.912232	15	9
	13	9.760927	10.239073	9.848717	10.151283	10.087790	9.912210	47	8
	15	9.760972	10.239028	9.848784	10.151216	10.087812	9.912188	45	7
	30	9.761017	10.238983	9.848851	10.151149	10.087835	9.912165	30	6
	45	9.761062	10.238938	9.848918	10.151082	10.087857	9.912143	15	5
	14	9.761106	10.238894	9.848985	10.151015	10.087879	9.912121	46	4
	15	9.761151	10.238849	9.849053	10.150947	10.087902	9.912098	45	3
	30	9.761196	10.238804	9.849120	10.150880	10.087924	9.912076	30	2
	45	9.761240	10.238760	9.849187	10.150813	10.087946	9.912054	15	1
	15	9.761285	10.238715	9.849254	10.150746	10.087969	9.912031	45	0
	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
30°		LOG. SINES, &c.						54 deg	

2 ^h 21 ^m .		LOG. SINES, &c. (t.)						35 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.761285	10.238715	9.849254	10.150746	10.087969	9.912031	45	60
1	15	9.761330	10.238670	9.849321	10.150679	10.087991	9.912009	45	59
2	30	9.761374	10.238626	9.849388	10.150612	10.088013	9.911987	30	58
3	45	9.761419	10.238581	9.849455	10.150545	10.088036	9.911964	15	57
4	16	9.761464	10.238536	9.849522	10.150478	10.088058	9.911942	44	56
5	15	9.761508	10.238492	9.849589	10.150411	10.088080	9.911920	45	55
6	30	9.761553	10.238447	9.849656	10.150344	10.088103	9.911897	30	54
7	45	9.761598	10.238402	9.849723	10.150277	10.088125	9.911875	15	53
8	17	9.761642	10.238358	9.849790	10.150210	10.088147	9.911853	43	52
9	15	9.761687	10.238313	9.849856	10.150144	10.088170	9.911830	45	51
10	30	9.761732	10.238268	9.849923	10.150077	10.088192	9.911808	30	50
11	45	9.761776	10.238224	9.849990	10.150010	10.088214	9.911786	15	49
12	18	9.761821	10.238179	9.850057	10.149943	10.088237	9.911763	42	48
13	15	9.761865	10.238135	9.850124	10.149876	10.088259	9.911741	45	47
14	30	9.761910	10.238090	9.850191	10.149809	10.088281	9.911719	30	46
15	45	9.761955	10.238045	9.850258	10.149742	10.088304	9.911696	15	45
16	19	9.761999	10.238001	9.850325	10.149675	10.088326	9.911674	41	44
17	15	9.762044	10.237956	9.850392	10.149608	10.088349	9.911651	45	43
18	30	9.762088	10.237912	9.850459	10.149541	10.088371	9.911629	30	42
19	45	9.762133	10.237867	9.850526	10.149474	10.088393	9.911607	15	41
20	20	9.762177	10.237823	9.850593	10.149407	10.088416	9.911584	40	40
21	15	9.762222	10.237778	9.850660	10.149340	10.088438	9.911562	45	39
22	30	9.762267	10.237733	9.850727	10.149273	10.088460	9.911540	30	38
23	45	9.762311	10.237689	9.850794	10.149206	10.088483	9.911517	15	37
24	21	9.762356	10.237644	9.850861	10.149139	10.088505	9.911495	39	36
25	15	9.762400	10.237600	9.850928	10.149072	10.088528	9.911472	45	35
26	30	9.762445	10.237555	9.850995	10.149005	10.088550	9.911450	30	34
27	45	9.762489	10.237511	9.851062	10.148938	10.088572	9.911428	15	33
28	22	9.762534	10.237466	9.851128	10.148872	10.088595	9.911405	38	32
29	15	9.762578	10.237422	9.851195	10.148805	10.088617	9.911383	45	31
30	30	9.762623	10.237377	9.851262	10.148738	10.088640	9.911360	30	30
31	45	9.762667	10.237333	9.851329	10.148671	10.088662	9.911338	15	29
32	23	9.762712	10.237288	9.851396	10.148604	10.088685	9.911315	37	28
33	15	9.762756	10.237244	9.851463	10.148537	10.088707	9.911293	45	27
34	30	9.762800	10.237200	9.851530	10.148470	10.088729	9.911271	30	26
35	45	9.762845	10.237155	9.851597	10.148403	10.088752	9.911248	15	25
36	24	9.762889	10.237111	9.851664	10.148336	10.088774	9.911226	36	24
37	15	9.762934	10.237066	9.851731	10.148269	10.088797	9.911203	45	23
38	30	9.762978	10.237022	9.851797	10.148203	10.088819	9.911181	30	22
39	45	9.763023	10.236977	9.851864	10.148136	10.088842	9.911158	15	21
40	25	9.763067	10.236933	9.851931	10.148069	10.088864	9.911136	35	20
41	15	9.763111	10.236889	9.851998	10.148002	10.088887	9.911113	45	19
42	30	9.763156	10.236844	9.852065	10.147935	10.088909	9.911091	30	18
43	45	9.763200	10.236800	9.852132	10.147868	10.088932	9.911068	15	17
44	26	9.763245	10.236755	9.852199	10.147801	10.088954	9.911046	34	16
45	15	9.763289	10.236711	9.852265	10.147735	10.088976	9.911024	45	15
46	30	9.763333	10.236667	9.852332	10.147668	10.088999	9.911001	30	14
47	45	9.763378	10.236622	9.852399	10.147601	10.089021	9.910979	15	13
48	27	9.763422	10.236578	9.852466	10.147534	10.089044	9.910956	33	12
49	15	9.763467	10.236533	9.852533	10.147467	10.089066	9.910934	45	11
50	30	9.763511	10.236489	9.852600	10.147400	10.089089	9.910911	30	10
51	45	9.763555	10.236445	9.852667	10.147333	10.089111	9.910889	15	9
52	28	9.763600	10.236400	9.852733	10.147267	10.089134	9.910866	32	8
53	15	9.763644	10.236356	9.852800	10.147200	10.089156	9.910844	45	7
54	30	9.763688	10.236312	9.852867	10.147133	10.089179	9.910821	30	6
55	45	9.763733	10.236267	9.852934	10.147066	10.089201	9.910799	15	5
56	29	9.763777	10.236223	9.853001	10.146999	10.089224	9.910776	31	4
57	15	9.763821	10.236179	9.853068	10.146932	10.089246	9.910754	45	3
58	30	9.763865	10.236135	9.853134	10.146866	10.089269	9.910731	30	2
59	45	9.763910	10.236090	9.853201	10.146799	10.089291	9.910709	15	1
60	30	9.763954	10.236046	9.853268	10.146732	10.089314	9.910686	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 38 ^m .		LOG. SINES, &c.						54 deg.	

22°		LOG. SINES, &c. (t.)					85 deg.	
	min.	cosecant.	tangent.	cotangent.	secant.	cosine.		sec.
30	9.763964	10.236046	9.853268	10.146732	10.089314	9.910686	30	60
15	9.763998	10.236002	9.853335	10.146665	10.089337	9.910663	45	59
30	9.764043	10.235957	9.853402	10.146598	10.089359	9.910641	30	58
45	9.764087	10.235913	9.853468	10.146532	10.089382	9.910618	15	57
31	9.764131	10.235869	9.853535	10.146465	10.089404	9.910596	29	56
15	9.764175	10.235825	9.853602	10.146398	10.089427	9.910573	45	55
30	9.764220	10.235780	9.853669	10.146331	10.089449	9.910551	30	54
45	9.764264	10.235736	9.853736	10.146264	10.089472	9.910528	15	53
32	9.764308	10.235692	9.853802	10.146198	10.089494	9.910506	28	52
15	9.764352	10.235648	9.853869	10.146131	10.089517	9.910483	45	51
30	9.764396	10.235604	9.853936	10.146064	10.089539	9.910461	30	50
45	9.764441	10.235559	9.854003	10.145997	10.089562	9.910438	15	49
33	9.764485	10.235515	9.854069	10.145931	10.089585	9.910415	27	48
15	9.764529	10.235471	9.854136	10.145864	10.089607	9.910393	45	47
30	9.764573	10.235427	9.854203	10.145797	10.089630	9.910370	30	46
45	9.764617	10.235383	9.854270	10.145730	10.089652	9.910348	15	45
34	9.764662	10.235338	9.854336	10.145664	10.089675	9.910325	26	44
15	9.764706	10.235294	9.854403	10.145597	10.089697	9.910303	45	43
30	9.764750	10.235250	9.854470	10.145530	10.089720	9.910280	30	42
45	9.764794	10.235206	9.854537	10.145463	10.089743	9.910257	15	41
35	9.764838	10.235162	9.854603	10.145397	10.089765	9.910235	25	40
15	9.764882	10.235118	9.854670	10.145330	10.089788	9.910212	45	39
30	9.764926	10.235074	9.854737	10.145263	10.089810	9.910190	30	38
45	9.764971	10.235029	9.854804	10.145196	10.089833	9.910167	15	37
36	9.765015	10.234985	9.854870	10.145130	10.089856	9.910144	24	36
15	9.765059	10.234941	9.854937	10.145063	10.089878	9.910122	45	35
30	9.765103	10.234897	9.855004	10.144996	10.089901	9.910099	30	34
45	9.765147	10.234853	9.855070	10.144930	10.089924	9.910076	15	33
37	9.765191	10.234809	9.855137	10.144863	10.089946	9.910054	23	32
15	9.765235	10.234765	9.855204	10.144796	10.089969	9.910031	45	31
30	9.765279	10.234721	9.855271	10.144729	10.089991	9.910009	30	30
45	9.765323	10.234677	9.855337	10.144663	10.090014	9.909986	15	29
38	9.765367	10.234633	9.855404	10.144596	10.090037	9.909963	22	28
15	9.765411	10.234589	9.855471	10.144529	10.090059	9.909941	45	27
30	9.765455	10.234545	9.855537	10.144463	10.090082	9.909918	30	26
45	9.765500	10.234500	9.855604	10.144396	10.090105	9.909895	15	25
39	9.765544	10.234456	9.855671	10.144329	10.090127	9.909873	21	24
15	9.765588	10.234412	9.855737	10.144263	10.090150	9.909850	45	23
30	9.765632	10.234368	9.855804	10.144196	10.090173	9.909827	30	22
45	9.765676	10.234324	9.855871	10.144129	10.090195	9.909805	15	21
40	9.765720	10.234280	9.855938	10.144062	10.090218	9.909782	20	20
15	9.765764	10.234236	9.856004	10.143996	10.090241	9.909759	45	19
30	9.765808	10.234192	9.856071	10.143929	10.090263	9.909737	30	18
45	9.765852	10.234148	9.856138	10.143862	10.090286	9.909714	15	17
41	9.765896	10.234104	9.856204	10.143796	10.090309	9.909691	19	16
15	9.765940	10.234060	9.856271	10.143729	10.090331	9.909669	45	15
30	9.765984	10.234016	9.856337	10.143663	10.090354	9.909646	30	14
45	9.766028	10.233972	9.856404	10.143596	10.090377	9.909623	15	13
42	9.766071	10.233929	9.856471	10.143529	10.090399	9.909601	18	12
15	9.766115	10.233885	9.856537	10.143463	10.090422	9.909578	45	11
30	9.766159	10.233841	9.856604	10.143396	10.090445	9.909555	30	10
45	9.766203	10.233797	9.856671	10.143329	10.090467	9.909533	15	9
43	9.766247	10.233753	9.856737	10.143263	10.090490	9.909510	17	8
15	9.766291	10.233709	9.856804	10.143196	10.090513	9.909487	45	7
30	9.766335	10.233665	9.856871	10.143129	10.090536	9.909464	30	6
45	9.766379	10.233621	9.856937	10.143063	10.090558	9.909442	15	5
44	9.766423	10.233577	9.857004	10.142996	10.090581	9.909419	16	4
15	9.766467	10.233533	9.857070	10.142930	10.090604	9.909396	45	3
30	9.766511	10.233489	9.857137	10.142863	10.090626	9.909374	30	2
45	9.766555	10.233445	9.857204	10.142796	10.090649	9.909351	15	1
45	9.766598	10.233402	9.857270	10.142730	10.090672	9.909328	15	0
	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
37°		LOG. SINES, &c.					54 deg	

2 ^h 23 ^m .		LOG. SINES, &c. (t.)						35 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.766598	10.233402	9.857270	10.142730	10.090672	9.909328	15	60
1	15	9.766642	10.233358	9.857337	10.142663	10.090695	9.909305	45	59
2	30	9.766686	10.233314	9.857404	10.142596	10.090717	9.909283	30	58
3	45	9.766730	10.233270	9.857470	10.142530	10.090740	9.909260	15	57
4	46	9.766774	10.233226	9.857537	10.142463	10.090763	9.909237	14	56
5	15	9.766818	10.233182	9.857603	10.142397	10.090786	9.909214	45	55
6	30	9.766862	10.233138	9.857670	10.142330	10.090808	9.909192	30	54
7	45	9.766905	10.233095	9.857736	10.142264	10.090831	9.909169	15	53
8	47	9.766949	10.233051	9.857803	10.142197	10.090854	9.909146	13	52
9	15	9.766993	10.233007	9.857870	10.142130	10.090877	9.909123	45	51
10	30	9.767037	10.232963	9.857936	10.142064	10.090899	9.909101	30	50
11	45	9.767081	10.232919	9.858003	10.141997	10.090922	9.909078	15	49
12	48	9.767124	10.232876	9.858069	10.141931	10.090945	9.909055	12	48
13	15	9.767168	10.232832	9.858136	10.141864	10.090968	9.909032	45	47
14	30	9.767212	10.232788	9.858202	10.141798	10.090991	9.909009	30	46
15	45	9.767256	10.232744	9.858269	10.141731	10.091013	9.908987	15	45
16	49	9.767300	10.232700	9.858336	10.141664	10.091036	9.908964	11	44
17	15	9.767343	10.232657	9.858402	10.141598	10.091059	9.908941	45	43
18	30	9.767387	10.232613	9.858469	10.141531	10.091082	9.908918	30	42
19	45	9.767431	10.232569	9.858535	10.141465	10.091105	9.908895	15	41
20	50	9.767475	10.232525	9.858602	10.141398	10.091127	9.908873	10	40
21	15	9.767518	10.232482	9.858668	10.141332	10.091150	9.908850	45	39
22	30	9.767562	10.232438	9.858735	10.141265	10.091173	9.908827	30	38
23	45	9.767606	10.232394	9.858801	10.141199	10.091196	9.908804	15	37
24	51	9.767649	10.232351	9.858868	10.141132	10.091219	9.908781	9	36
25	15	9.767693	10.232307	9.858934	10.141066	10.091241	9.908759	45	35
26	30	9.767737	10.232263	9.859001	10.140999	10.091264	9.908736	30	34
27	45	9.767780	10.232220	9.859068	10.140932	10.091287	9.908713	15	33
28	52	9.767824	10.232176	9.859134	10.140866	10.091310	9.908690	8	32
29	15	9.767868	10.232132	9.859201	10.140799	10.091333	9.908667	45	31
30	30	9.767912	10.232088	9.859267	10.140733	10.091356	9.908644	30	30
31	45	9.767955	10.232045	9.859334	10.140666	10.091378	9.908622	15	29
32	53	9.767999	10.232001	9.859400	10.140600	10.091401	9.908599	7	28
33	15	9.768043	10.231957	9.859467	10.140533	10.091424	9.908576	45	27
34	30	9.768086	10.231914	9.859533	10.140467	10.091447	9.908553	30	26
35	45	9.768130	10.231870	9.859600	10.140400	10.091470	9.908530	15	25
36	54	9.768173	10.231827	9.859666	10.140334	10.091493	9.908507	6	24
37	15	9.768217	10.231783	9.859733	10.140267	10.091516	9.908484	45	23
38	30	9.768261	10.231739	9.859799	10.140201	10.091538	9.908462	30	22
39	45	9.768304	10.231696	9.859866	10.140134	10.091561	9.908439	15	21
40	55	9.768348	10.231652	9.859932	10.140068	10.091584	9.908416	5	20
41	15	9.768392	10.231608	9.859999	10.140001	10.091607	9.908393	45	19
42	30	9.768435	10.231565	9.860065	10.139935	10.091630	9.908370	30	18
43	45	9.768479	10.231521	9.860131	10.139869	10.091653	9.908347	15	17
44	56	9.768522	10.231478	9.860198	10.139802	10.091676	9.908324	4	16
45	15	9.768566	10.231434	9.860264	10.139736	10.091699	9.908301	45	15
46	30	9.768609	10.231391	9.860331	10.139669	10.091722	9.908278	30	14
47	45	9.768653	10.231347	9.860397	10.139603	10.091744	9.908255	15	13
48	57	9.768697	10.231303	9.860464	10.139536	10.091767	9.908233	3	12
49	15	9.768740	10.231260	9.860530	10.139470	10.091790	9.908210	45	11
50	30	9.768784	10.231216	9.860597	10.139403	10.091813	9.908187	30	10
51	45	9.768827	10.231173	9.860663	10.139337	10.091836	9.908164	15	9
52	58	9.768871	10.231129	9.860730	10.139270	10.091859	9.908141	2	8
53	15	9.768914	10.231086	9.860796	10.139204	10.091882	9.908118	45	7
54	30	9.768958	10.231042	9.860862	10.139138	10.091905	9.908095	30	6
55	45	9.769001	10.230999	9.860929	10.139071	10.091928	9.908072	15	5
56	59	9.769045	10.230955	9.860995	10.139005	10.091951	9.908049	1	4
57	15	9.769088	10.230912	9.861062	10.138938	10.091974	9.908026	45	3
58	30	9.769132	10.230868	9.861128	10.138872	10.091997	9.908003	30	2
59	45	9.769175	10.230825	9.861195	10.138805	10.092020	9.907981	15	1
60	60	9.769219	10.230781	9.861261	10.138739	10.092042	9.907958	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 36 ^m .		LOG. SINES, &c.						54 deg.	

2 ^h 24 ^m .		LOG. SINES, &c. (v)						36 deg.		
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"	sec.
0	0	9.769219	10.230781	9.861261	10.138739	10.092042	9.907958	60		60
1	15	9.769262	10.230738	9.861327	10.138673	10.092065	9.907935	45		59
2	30	9.769306	10.230694	9.861394	10.138606	10.092088	9.907912	30		58
3	45	9.769349	10.230651	9.861460	10.138540	10.092111	9.907889	15		57
4	1	9.769392	10.230608	9.861527	10.138473	10.092134	9.907866		59	56
5	15	9.769436	10.230564	9.861593	10.138407	10.092157	9.907843	45		55
6	30	9.769479	10.230521	9.861659	10.138341	10.092180	9.907820	30		54
7	45	9.769523	10.230477	9.861726	10.138274	10.092203	9.907797	15		53
8	2	9.769566	10.230434	9.861792	10.138208	10.092226	9.907774		58	52
9	15	9.769610	10.230390	9.861859	10.138141	10.092249	9.907751	45		51
10	30	9.769653	10.230347	9.861925	10.138075	10.092272	9.907728	30		50
11	45	9.769696	10.230304	9.861991	10.138009	10.092295	9.907705	15		49
12	3	9.769740	10.230260	9.862058	10.137942	10.092318	9.907682		57	48
13	15	9.769783	10.230217	9.862124	10.137876	10.092341	9.907659	45		47
14	30	9.769827	10.230173	9.862191	10.137809	10.092364	9.907636	30		46
15	45	9.769870	10.230130	9.862257	10.137743	10.092387	9.907613	15		45
16	4	9.769912	10.230087	9.862323	10.137677	10.092410	9.907590		56	44
17	15	9.769957	10.230043	9.862390	10.137610	10.092433	9.907567	45		43
18	30	9.770000	10.230000	9.862456	10.137544	10.092456	9.907544	30		42
19	45	9.770043	10.229957	9.862522	10.137478	10.092479	9.907521	15		41
20	5	9.770087	10.229913	9.862589	10.137411	10.092502	9.907498		55	40
21	15	9.770130	10.229870	9.862655	10.137345	10.092525	9.907475	45		39
22	30	9.770173	10.229827	9.862721	10.137279	10.092548	9.907452	30		38
23	45	9.770217	10.229783	9.862788	10.137212	10.092571	9.907429	15		37
24	6	9.770260	10.229740	9.862854	10.137146	10.092594	9.907406		54	36
25	15	9.770303	10.229697	9.862920	10.137080	10.092617	9.907383	45		35
26	30	9.770347	10.229653	9.862987	10.137013	10.092640	9.907360	30		34
27	45	9.770390	10.229610	9.863053	10.136947	10.092663	9.907337	15		33
28	7	9.770433	10.229567	9.863119	10.136881	10.092686	9.907314		53	32
29	15	9.770476	10.229524	9.863186	10.136814	10.092709	9.907291	45		31
30	30	9.770520	10.229480	9.863252	10.136748	10.092732	9.907268	30		30
31	45	9.770563	10.229437	9.863318	10.136682	10.092755	9.907245	15		29
32	8	9.770606	10.229394	9.863385	10.136615	10.092778	9.907222		52	28
33	15	9.770650	10.229350	9.863451	10.136549	10.092802	9.907198	45		27
34	30	9.770693	10.229307	9.863517	10.136483	10.092825	9.907175	30		26
35	45	9.770736	10.229264	9.863584	10.136416	10.092848	9.907152	15		25
36	9	9.770779	10.229221	9.863650	10.136350	10.092871	9.907129		51	24
37	15	9.770822	10.229178	9.863716	10.136284	10.092894	9.907106	45		23
38	30	9.770866	10.229134	9.863783	10.136217	10.092917	9.907083	30		22
39	45	9.770909	10.229091	9.863849	10.136151	10.092940	9.907060	15		21
40	10	9.770952	10.229048	9.863915	10.136085	10.092963	9.907037		50	20
41	15	9.770995	10.229005	9.863981	10.136019	10.092986	9.907014	45		19
42	30	9.771039	10.228961	9.864048	10.135952	10.093009	9.906991	30		18
43	45	9.771082	10.228918	9.864114	10.135886	10.093032	9.906968	15		17
44	11	9.771125	10.228875	9.864180	10.135820	10.093055	9.906945		49	16
45	15	9.771168	10.228832	9.864247	10.135753	10.093079	9.906921	45		15
46	30	9.771211	10.228789	9.864313	10.135687	10.093102	9.906898	30		14
47	45	9.771254	10.228746	9.864379	10.135621	10.093125	9.906875	15		13
48	12	9.771298	10.228702	9.864445	10.135555	10.093148	9.906852		48	12
49	15	9.771341	10.228659	9.864512	10.135488	10.093171	9.906829	45		11
50	30	9.771384	10.228616	9.864578	10.135422	10.093194	9.906806	30		10
51	45	9.771427	10.228573	9.864644	10.135356	10.093217	9.906783	15		9
52	13	9.771470	10.228530	9.864710	10.135290	10.093240	9.906760		47	8
53	15	9.771513	10.228487	9.864777	10.135223	10.093263	9.906737	45		7
54	30	9.771556	10.228444	9.864843	10.135157	10.093287	9.906713	30		6
55	45	9.771599	10.228401	9.864909	10.135091	10.093310	9.906690	15		5
56	14	9.771643	10.228357	9.864975	10.135025	10.093333	9.906667		46	4
57	15	9.771686	10.228314	9.865042	10.134958	10.093356	9.906644	45		3
58	30	9.771729	10.228271	9.865108	10.134892	10.093379	9.906621	30		2
59	45	9.771772	10.228228	9.865174	10.134826	10.093402	9.906598	15		1
60	15	9.771815	10.228185	9.865240	10.134760	10.093426	9.906574		45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"	sec.
3 ^h 35 ^m .		LOG. SINES, &c.						53 deg.		

2 ^h 25 ^m .		LOG. SINES, &c. (L.)						36 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.771815	10.228185	9.865240	10.134760	10.093426	9.906574	45	60
1	15	9.771858	10.228142	9.865307	10.134693	10.093449	9.906551	45	59
2	30	9.771901	10.228099	9.865373	10.134627	10.093472	9.906528	30	58
3	45	9.771944	10.228056	9.865439	10.134561	10.093495	9.906505	15	57
4	16	9.771987	10.228013	9.865505	10.134495	10.093518	9.906482	44	56
5	15	9.772030	10.227970	9.865571	10.134429	10.093541	9.906459	45	55
6	30	9.772073	10.227927	9.865638	10.134362	10.093565	9.906435	30	54
7	45	9.772116	10.227884	9.865704	10.134296	10.093588	9.906412	15	53
8	17	9.772159	10.227841	9.865770	10.134230	10.093611	9.906389	43	52
9	15	9.772202	10.227798	9.865836	10.134164	10.093634	9.906366	45	51
10	30	9.772245	10.227755	9.865903	10.134097	10.093657	9.906343	30	50
11	45	9.772288	10.227712	9.865969	10.134031	10.093680	9.906320	15	49
12	18	9.772331	10.227669	9.866035	10.133965	10.093704	9.906296	42	48
13	15	9.772374	10.227626	9.866101	10.133899	10.093727	9.906273	45	47
14	30	9.772417	10.227583	9.866167	10.133833	10.093750	9.906250	30	46
15	45	9.772460	10.227540	9.866233	10.133767	10.093773	9.906227	15	45
16	19	9.772503	10.227497	9.866300	10.133700	10.093796	9.906204	41	44
17	15	9.772546	10.227454	9.866366	10.133634	10.093820	9.906180	45	43
18	30	9.772589	10.227411	9.866432	10.133568	10.093843	9.906157	30	42
19	45	9.772632	10.227368	9.866498	10.133502	10.093866	9.906134	15	41
20	20	9.772675	10.227325	9.866564	10.133436	10.093889	9.906111	40	40
21	15	9.772718	10.227282	9.866631	10.133369	10.093913	9.906087	45	39
22	30	9.772761	10.227239	9.866697	10.133303	10.093936	9.906064	30	38
23	45	9.772804	10.227196	9.866763	10.133237	10.093959	9.906041	15	37
24	21	9.772847	10.227153	9.866829	10.133171	10.093982	9.906018	39	36
25	15	9.772890	10.227110	9.866895	10.133105	10.094006	9.905994	45	35
26	30	9.772933	10.227067	9.866961	10.133039	10.094029	9.905971	30	34
27	45	9.772976	10.227024	9.867028	10.132972	10.094052	9.905948	15	33
28	22	9.773018	10.226982	9.867094	10.132906	10.094075	9.905925	38	32
29	15	9.773061	10.226939	9.867160	10.132840	10.094099	9.905901	45	31
30	30	9.773104	10.226896	9.867226	10.132774	10.094122	9.905878	30	30
31	45	9.773147	10.226853	9.867292	10.132708	10.094145	9.905855	15	29
32	23	9.773190	10.226810	9.867358	10.132642	10.094168	9.905832	37	28
33	15	9.773233	10.226767	9.867424	10.132576	10.094192	9.905808	45	27
34	30	9.773276	10.226724	9.867490	10.132510	10.094215	9.905785	30	26
35	45	9.773318	10.226682	9.867557	10.132443	10.094238	9.905762	15	25
36	24	9.773361	10.226639	9.867623	10.132377	10.094261	9.905739	36	24
37	15	9.773404	10.226596	9.867689	10.132311	10.094285	9.905715	45	23
38	30	9.773447	10.226553	9.867755	10.132245	10.094308	9.905692	30	22
39	45	9.773490	10.226510	9.867821	10.132179	10.094331	9.905669	15	21
40	25	9.773533	10.226467	9.867887	10.132113	10.094355	9.905645	35	20
41	15	9.773575	10.226425	9.867953	10.132047	10.094378	9.905622	45	19
42	30	9.773618	10.226382	9.868019	10.131981	10.094401	9.905599	30	18
43	45	9.773661	10.226339	9.868086	10.131914	10.094425	9.905575	15	17
44	26	9.773704	10.226296	9.868152	10.131848	10.094448	9.905552	34	16
45	15	9.773747	10.226253	9.868218	10.131782	10.094471	9.905529	45	15
46	30	9.773789	10.226211	9.868284	10.131716	10.094494	9.905506	30	14
47	45	9.773832	10.226168	9.868350	10.131650	10.094518	9.905482	15	13
48	27	9.773875	10.226125	9.868416	10.131584	10.094541	9.905459	33	12
49	15	9.773918	10.226082	9.868482	10.131518	10.094564	9.905436	45	11
50	30	9.773960	10.226040	9.868548	10.131452	10.094588	9.905412	30	10
51	45	9.774003	10.225997	9.868614	10.131386	10.094611	9.905389	15	9
52	28	9.774046	10.225954	9.868680	10.131320	10.094634	9.905366	32	8
53	15	9.774089	10.225911	9.868746	10.131254	10.094658	9.905342	45	7
54	30	9.774131	10.225869	9.868812	10.131188	10.094681	9.905319	30	6
55	45	9.774174	10.225826	9.868879	10.131121	10.094705	9.905295	15	5
56	29	9.774217	10.225783	9.868945	10.131055	10.094728	9.905272	31	4
57	15	9.774259	10.225741	9.869011	10.130989	10.094751	9.905249	45	3
58	30	9.774302	10.225698	9.869077	10.130923	10.094775	9.905225	30	2
59	45	9.774345	10.225655	9.869143	10.130857	10.094798	9.905202	15	1
60	30	9.774388	10.225612	9.869209	10.130791	10.094821	9.905179	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 34 ^m .		LOG. SINES, &c.						53 deg.	

8° 26'.		LOG. SINES, &c. (L.)						36 deg.	
	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.			sec.
30	9.774388	10.225612	9.869209	10.130791	10.094821	9.905179	30	60	
15	9.774430	10.225570	9.869275	10.130725	10.094845	9.905155	45	59	
30	9.774473	10.225527	9.869341	10.130659	10.094868	9.905132	30	58	
45	9.774516	10.225484	9.869407	10.130593	10.094891	9.905109	15	57	
31	9.774558	10.225442	9.869473	10.130527	10.094915	9.905085	29	56	
15	9.774601	10.225399	9.869539	10.130461	10.094938	9.905062	45	55	
30	9.774644	10.225356	9.869605	10.130395	10.094962	9.905038	30	54	
45	9.774686	10.225314	9.869671	10.130329	10.094985	9.905015	15	53	
32	9.774729	10.225271	9.869737	10.130263	10.095008	9.904992	28	52	
15	9.774771	10.225229	9.869803	10.130197	10.095032	9.904968	45	51	
30	9.774814	10.225186	9.869869	10.130131	10.095055	9.904945	30	50	
45	9.774857	10.225143	9.869935	10.130065	10.095079	9.904921	15	49	
33	9.774899	10.225101	9.870001	10.129999	10.095102	9.904898	27	48	
15	9.774942	10.225058	9.870067	10.129933	10.095125	9.904875	45	47	
30	9.774984	10.225016	9.870133	10.129867	10.095149	9.904851	30	46	
45	9.775027	10.224973	9.870199	10.129801	10.095172	9.904828	15	45	
34	9.775070	10.224930	9.870265	10.129735	10.095196	9.904804	26	44	
15	9.775112	10.224888	9.870331	10.129669	10.095219	9.904781	45	43	
30	9.775155	10.224845	9.870397	10.129603	10.095243	9.904757	30	42	
45	9.775197	10.224803	9.870463	10.129537	10.095266	9.904734	15	41	
35	9.775240	10.224760	9.870529	10.129471	10.095289	9.904711	25	40	
15	9.775282	10.224718	9.870595	10.129405	10.095313	9.904687	45	39	
30	9.775325	10.224675	9.870661	10.129339	10.095336	9.904664	30	38	
45	9.775368	10.224632	9.870727	10.129273	10.095360	9.904640	15	37	
36	9.775410	10.224590	9.870793	10.129207	10.095383	9.904617	24	36	
15	9.775453	10.224547	9.870859	10.129141	10.095407	9.904593	45	35	
30	9.775495	10.224505	9.870925	10.129075	10.095430	9.904570	30	34	
45	9.775538	10.224462	9.870991	10.129009	10.095454	9.904546	15	33	
37	9.775580	10.224420	9.871057	10.128943	10.095477	9.904523	23	32	
15	9.775623	10.224377	9.871123	10.128877	10.095501	9.904499	45	31	
30	9.775665	10.224335	9.871189	10.128811	10.095524	9.904476	30	30	
45	9.775708	10.224292	9.871255	10.128745	10.095548	9.904452	15	29	
38	9.775750	10.224250	9.871321	10.128679	10.095571	9.904429	22	28	
15	9.775793	10.224207	9.871387	10.128613	10.095594	9.904406	45	27	
30	9.775835	10.224165	9.871453	10.128547	10.095618	9.904382	30	26	
45	9.775877	10.224123	9.871519	10.128481	10.095641	9.904359	15	25	
39	9.775920	10.224080	9.871585	10.128415	10.095665	9.904335	21	24	
15	9.775962	10.224038	9.871651	10.128349	10.095688	9.904312	45	23	
30	9.776005	10.223995	9.871717	10.128283	10.095712	9.904288	30	22	
45	9.776047	10.223953	9.871783	10.128217	10.095735	9.904265	15	21	
40	9.776090	10.223910	9.871849	10.128151	10.095759	9.904241	20	20	
15	9.776132	10.223868	9.871914	10.128086	10.095782	9.904218	45	19	
30	9.776174	10.223826	9.871980	10.128020	10.095806	9.904194	30	18	
45	9.776217	10.223783	9.872046	10.127954	10.095830	9.904170	15	17	
41	9.776259	10.223741	9.872112	10.127888	10.095853	9.904147	19	16	
15	9.776302	10.223698	9.872178	10.127822	10.095877	9.904123	45	15	
30	9.776344	10.223656	9.872244	10.127756	10.095900	9.904100	30	14	
45	9.776386	10.223614	9.872310	10.127690	10.095924	9.904076	15	13	
42	9.776429	10.223571	9.872376	10.127624	10.095947	9.904053	18	12	
15	9.776471	10.223529	9.872442	10.127558	10.095971	9.904029	45	11	
30	9.776514	10.223486	9.872508	10.127492	10.095994	9.904006	30	10	
45	9.776556	10.223444	9.872574	10.127426	10.096018	9.903982	15	9	
43	9.776598	10.223402	9.872640	10.127360	10.096041	9.903959	17	8	
15	9.776641	10.223359	9.872705	10.127295	10.096065	9.903935	45	7	
30	9.776683	10.223317	9.872771	10.127229	10.096089	9.903911	30	6	
45	9.776725	10.223275	9.872837	10.127163	10.096112	9.903888	15	5	
44	9.776768	10.223232	9.872903	10.127097	10.096136	9.903864	16	4	
15	9.776810	10.223190	9.872969	10.127031	10.096159	9.903841	45	3	
30	9.776852	10.223148	9.873035	10.126965	10.096183	9.903817	30	2	
45	9.776895	10.223105	9.873101	10.126899	10.096206	9.903794	15	1	
45	9.776937	10.223063	9.873167	10.126833	10.096230	9.903770	15	0	
	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.			sec.
8° 33'.		LOG. SINES, &c.						53 deg.	

2 ^h 27 ^m .		LOG. SINES, &c. (l.)						36 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.776937	10.223063	9.873167	10.126833	10.096230	9.903770	15	60
1	15	9.776979	10.223021	9.873233	10.126767	10.096254	9.903746	45	59
2	30	9.777021	10.222979	9.873298	10.126702	10.096277	9.903723	30	58
3	45	9.777064	10.222936	9.873364	10.126636	10.096301	9.903699	15	57
4	46	9.777106	10.222894	9.873430	10.126570	10.096324	9.903676	14	56
5	15	9.777148	10.222852	9.873496	10.126504	10.096348	9.903652	45	55
6	30	9.777190	10.222810	9.873562	10.126438	10.096372	9.903628	30	54
7	45	9.777233	10.222767	9.873628	10.126372	10.096395	9.903605	15	53
8	47	9.777275	10.222725	9.873694	10.126306	10.096419	9.903581	13	52
9	15	9.777317	10.222683	9.873759	10.126241	10.096442	9.903558	45	51
10	30	9.777359	10.222641	9.873825	10.126175	10.096466	9.903534	30	50
11	45	9.777402	10.222598	9.873891	10.126109	10.096490	9.903510	15	49
12	48	9.777444	10.222556	9.873957	10.126043	10.096513	9.903487	12	48
13	15	9.777486	10.222514	9.874023	10.125977	10.096537	9.903463	45	47
14	30	9.777528	10.222472	9.874089	10.125911	10.096560	9.903440	30	46
15	45	9.777571	10.222429	9.874155	10.125845	10.096584	9.903416	15	45
16	49	9.777613	10.222387	9.874220	10.125780	10.096608	9.903392	11	44
17	15	9.777655	10.222345	9.874286	10.125714	10.096631	9.903369	45	43
18	30	9.777697	10.222303	9.874352	10.125648	10.096655	9.903345	30	42
19	45	9.777739	10.222261	9.874418	10.125582	10.096679	9.903321	15	41
20	50	9.777781	10.222219	9.874484	10.125516	10.096702	9.903298	10	40
21	15	9.777824	10.222176	9.874550	10.125450	10.096726	9.903274	45	39
22	30	9.777866	10.222134	9.874615	10.125385	10.096750	9.903250	30	38
23	45	9.777908	10.222092	9.874681	10.125319	10.096773	9.903227	15	37
24	51	9.777950	10.222050	9.874747	10.125253	10.096797	9.903203	9	36
25	15	9.777992	10.222008	9.874813	10.125187	10.096821	9.903179	45	35
26	30	9.778034	10.221966	9.874879	10.125121	10.096844	9.903156	30	34
27	45	9.778076	10.221924	9.874944	10.125056	10.096868	9.903132	15	33
28	52	9.778119	10.221881	9.875010	10.124990	10.096892	9.903108	8	32
29	15	9.778161	10.221839	9.875076	10.124924	10.096915	9.903085	45	31
30	30	9.778203	10.221797	9.875142	10.124858	10.096939	9.903061	30	30
31	45	9.778245	10.221755	9.875208	10.124792	10.096963	9.903037	15	29
32	53	9.778287	10.221713	9.875273	10.124727	10.096986	9.903014	7	28
33	15	9.778329	10.221671	9.875339	10.124661	10.097010	9.902990	45	27
34	30	9.778371	10.221629	9.875405	10.124595	10.097034	9.902966	30	26
35	45	9.778413	10.221587	9.875471	10.124529	10.097058	9.902942	15	25
36	54	9.778455	10.221545	9.875536	10.124464	10.097081	9.902919	6	24
37	15	9.778497	10.221503	9.875602	10.124398	10.097105	9.902895	45	23
38	30	9.778539	10.221461	9.875668	10.124332	10.097129	9.902871	30	22
39	45	9.778581	10.221419	9.875734	10.124266	10.097152	9.902848	15	21
40	55	9.778623	10.221377	9.875800	10.124200	10.097176	9.902824	5	20
41	15	9.778666	10.221334	9.875865	10.124135	10.097200	9.902800	45	19
42	30	9.778708	10.221292	9.875931	10.124069	10.097224	9.902776	30	18
43	45	9.778750	10.221250	9.875997	10.124003	10.097247	9.902753	15	17
44	56	9.778792	10.221208	9.876063	10.123937	10.097271	9.902729	4	16
45	15	9.778834	10.221166	9.876128	10.123872	10.097295	9.902705	45	15
46	30	9.778876	10.221124	9.876194	10.123806	10.097319	9.902681	30	14
47	45	9.778918	10.221082	9.876260	10.123740	10.097342	9.902658	15	13
48	57	9.778960	10.221040	9.876326	10.123674	10.097366	9.902634	3	12
49	15	9.779002	10.220998	9.876391	10.123609	10.097390	9.902610	45	11
50	30	9.779044	10.220956	9.876457	10.123543	10.097414	9.902586	30	10
51	45	9.779086	10.220914	9.876523	10.123477	10.097437	9.902563	15	9
52	58	9.779127	10.220873	9.876589	10.123411	10.097461	9.902539	2	8
53	15	9.779169	10.220831	9.876654	10.123346	10.097485	9.902515	45	7
54	30	9.779211	10.220789	9.876720	10.123280	10.097509	9.902491	30	6
55	45	9.779253	10.220747	9.876786	10.123214	10.097532	9.902468	15	5
56	59	9.779295	10.220705	9.876851	10.123149	10.097556	9.902444	1	4
57	15	9.779337	10.220663	9.876917	10.123083	10.097580	9.902420	45	3
58	30	9.779379	10.220621	9.876983	10.123017	10.097604	9.902396	30	2
59	45	9.779421	10.220579	9.877049	10.122951	10.097628	9.902372	15	1
60	60	9.779463	10.220537	9.877114	10.122886	10.097651	9.902349	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 32 ^m .		LOG. SINES, &c.						53 deg.	

28°.			LOG. SINES, &c. (t.)				37 deg.				
sec.	'	"	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	'	"	sec.
0	0		9.779463	10.220637	9.877114	10.122886	10.097651	9.902349		60	60
1	15		9.779505	10.220495	9.877180	10.122820	10.097675	9.902325	45		59
2	30		9.779547	10.220453	9.877246	10.122754	10.097699	9.902301	30		58
3	45		9.779589	10.220411	9.877311	10.122688	10.097723	9.902277	15		57
4	1		9.779631	10.220369	9.877377	10.122623	10.097747	9.902253		59	56
5	15		9.779672	10.220328	9.877443	10.122557	10.097770	9.902230	45		55
6	30		9.779714	10.220286	9.877509	10.122491	10.097794	9.902206	30		54
7	45		9.779756	10.220244	9.877574	10.122426	10.097818	9.902182	15		53
8	2		9.779798	10.220202	9.877640	10.122360	10.097842	9.902158		58	52
9	15		9.779840	10.220160	9.877706	10.122294	10.097866	9.902134	45		51
10	30		9.779882	10.220118	9.877771	10.122229	10.097890	9.902110	30		50
11	45		9.779924	10.220076	9.877837	10.122163	10.097913	9.902087	15		49
12	3		9.779965	10.220035	9.877903	10.122097	10.097937	9.902063		57	48
13	15		9.780007	10.219993	9.877968	10.122032	10.097961	9.902039	45		47
14	30		9.780049	10.219951	9.878034	10.121966	10.097985	9.902015	30		46
15	45		9.780091	10.219909	9.878100	10.121900	10.098009	9.901991	15		45
16	4		9.780133	10.219867	9.878165	10.121835	10.098033	9.901967		56	44
17	15		9.780175	10.219825	9.878231	10.121769	10.098057	9.901943	45		43
18	30		9.780216	10.219784	9.878297	10.121703	10.098080	9.901920	30		42
19	45		9.780258	10.219742	9.878362	10.121638	10.098104	9.901896	15		41
20	5		9.780300	10.219700	9.878428	10.121572	10.098128	9.901872		55	40
21	15		9.780342	10.219658	9.878494	10.121506	10.098152	9.901848	45		39
22	30		9.780384	10.219616	9.878559	10.121441	10.098176	9.901824	30		38
23	45		9.780425	10.219575	9.878625	10.121375	10.098200	9.901800	15		37
24	6		9.780467	10.219533	9.878691	10.121309	10.098224	9.901776		54	36
25	15		9.780509	10.219491	9.878756	10.121244	10.098248	9.901752	45		35
26	30		9.780551	10.219449	9.878822	10.121178	10.098271	9.901729	30		34
27	45		9.780592	10.219408	9.878888	10.121112	10.098295	9.901705	15		33
28	7		9.780634	10.219366	9.878953	10.121047	10.098319	9.901681		53	32
29	15		9.780676	10.219324	9.879019	10.120981	10.098343	9.901657	45		31
30	30		9.780717	10.219283	9.879084	10.120916	10.098367	9.901633	30		30
31	45		9.780759	10.219241	9.879150	10.120850	10.098391	9.901609	15		29
32	8		9.780801	10.219199	9.879216	10.120784	10.098415	9.901585		52	28
33	15		9.780843	10.219157	9.879281	10.120719	10.098439	9.901561	45		27
34	30		9.780884	10.219116	9.879347	10.120653	10.098463	9.901537	30		26
35	45		9.780926	10.219074	9.879413	10.120587	10.098487	9.901513	15		25
36	9		9.780968	10.219032	9.879478	10.120522	10.098511	9.901489		51	24
37	15		9.781009	10.218991	9.879544	10.120456	10.098534	9.901466	45		23
38	30		9.781051	10.218949	9.879609	10.120391	10.098558	9.901442	30		22
39	45		9.781093	10.218907	9.879675	10.120325	10.098582	9.901418	15		21
40	10		9.781134	10.218866	9.879741	10.120259	10.098606	9.901394		50	20
41	15		9.781176	10.218824	9.879806	10.120194	10.098630	9.901370	45		19
42	30		9.781218	10.218782	9.879872	10.120128	10.098654	9.901346	30		18
43	45		9.781259	10.218741	9.879937	10.120063	10.098678	9.901322	15		17
44	11		9.781301	10.218699	9.880003	10.119997	10.098702	9.901298		49	16
45	15		9.781343	10.218657	9.880069	10.119931	10.098726	9.901274	45		15
46	30		9.781384	10.218616	9.880134	10.119866	10.098750	9.901250	30		14
47	45		9.781426	10.218574	9.880200	10.119800	10.098774	9.901226	15		13
48	12		9.781467	10.218533	9.880265	10.119735	10.098798	9.901202		48	12
49	15		9.781509	10.218491	9.880331	10.119669	10.098822	9.901178	45		11
50	30		9.781551	10.218449	9.880397	10.119603	10.098846	9.901154	30		10
51	45		9.781592	10.218408	9.880462	10.119538	10.098870	9.901130	15		9
52	13		9.781634	10.218366	9.880528	10.119472	10.098894	9.901106		47	8
53	15		9.781675	10.218325	9.880593	10.119407	10.098918	9.901082	45		7
54	30		9.781717	10.218283	9.880659	10.119341	10.098942	9.901058	30		6
55	45		9.781759	10.218241	9.880724	10.119276	10.098966	9.901034	15		5
56	14		9.781800	10.218200	9.880790	10.119210	10.098990	9.901010		46	4
57	15		9.781842	10.218158	9.880855	10.119145	10.099014	9.900986	45		3
58	30		9.781883	10.218117	9.880921	10.119079	10.099038	9.900962	30		2
59	45		9.781925	10.218075	9.880987	10.119013	10.099062	9.900938	15		1
60	15		9.781966	10.218034	9.881052	10.118948	10.099086	9.900914		45	0
sec.	'	"	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	'	"	sec.
3° 31°.			LOG. SINES, &c.				52 deg.				

2 ^h 29 ^m .		LOG. SINES, &c. (t.)						37 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.781966	10.218034	9.881052	10.118948	10.099086	9.900914	45	60
1	15	9.782008	10.217992	9.881118	10.118882	10.099110	9.900890	45	59
2	30	9.782049	10.217951	9.881183	10.118817	10.099134	9.900866	30	58
3	45	9.782091	10.217909	9.881249	10.118751	10.099158	9.900842	15	57
4	16	9.782132	10.217868	9.881314	10.118686	10.099182	9.900818	44	56
5	15	9.782174	10.217826	9.881380	10.118620	10.099206	9.900794	45	55
6	30	9.782215	10.217785	9.881445	10.118555	10.099230	9.900770	30	54
7	45	9.782257	10.217743	9.881511	10.118489	10.099254	9.900746	15	53
8	17	9.782298	10.217702	9.881576	10.118424	10.099278	9.900722	43	52
9	15	9.782340	10.217660	9.881642	10.118358	10.099302	9.900698	45	51
10	30	9.782381	10.217619	9.881708	10.118292	10.099326	9.900674	30	50
11	45	9.782423	10.217577	9.881773	10.118227	10.099350	9.900650	15	49
12	18	9.782464	10.217536	9.881839	10.118161	10.099374	9.900626	42	48
13	15	9.782506	10.217494	9.881904	10.118096	10.099398	9.900602	45	47
14	30	9.782547	10.217453	9.881970	10.118030	10.099422	9.900578	30	46
15	45	9.782589	10.217411	9.882035	10.117965	10.099447	9.900553	15	45
16	19	9.782630	10.217370	9.882101	10.117899	10.099471	9.900529	41	44
17	15	9.782671	10.217329	9.882166	10.117834	10.099495	9.900505	45	43
18	30	9.782713	10.217287	9.882232	10.117768	10.099519	9.900481	30	42
19	45	9.782754	10.217246	9.882297	10.117703	10.099543	9.900457	15	41
20	20	9.782796	10.217204	9.882363	10.117637	10.099567	9.900433	40	40
21	15	9.782837	10.217163	9.882428	10.117572	10.099591	9.900409	45	39
22	30	9.782879	10.217121	9.882494	10.117506	10.099615	9.900385	30	38
23	45	9.782920	10.217080	9.882559	10.117441	10.099639	9.900361	15	37
24	21	9.782961	10.217039	9.882625	10.117375	10.099663	9.900337	39	36
25	15	9.783003	10.216997	9.882690	10.117310	10.099687	9.900313	45	35
26	30	9.783044	10.216956	9.882756	10.117244	10.099712	9.900288	30	34
27	45	9.783085	10.216915	9.882821	10.117179	10.099736	9.900264	15	33
28	22	9.783127	10.216873	9.882887	10.117113	10.099760	9.900240	38	32
29	15	9.783168	10.216832	9.882952	10.117048	10.099784	9.900216	45	31
30	30	9.783209	10.216791	9.883017	10.116983	10.099808	9.900192	30	30
31	45	9.783251	10.216749	9.883083	10.116917	10.099832	9.900168	15	29
32	23	9.783292	10.216708	9.883148	10.116852	10.099856	9.900144	37	28
33	15	9.783334	10.216666	9.883214	10.116786	10.099880	9.900120	45	27
34	30	9.783375	10.216625	9.883279	10.116721	10.099905	9.900095	30	26
35	45	9.783416	10.216584	9.883345	10.116655	10.099929	9.900071	15	25
36	24	9.783457	10.216543	9.883410	10.116590	10.099953	9.900047	36	24
37	15	9.783499	10.216501	9.883476	10.116524	10.099977	9.900023	45	23
38	30	9.783540	10.216460	9.883541	10.116459	10.100001	9.899999	30	22
39	45	9.783581	10.216419	9.883607	10.116393	10.100025	9.899975	15	21
40	25	9.783623	10.216377	9.883672	10.116328	10.100049	9.899951	35	20
41	15	9.783664	10.216336	9.883737	10.116263	10.100074	9.899926	45	19
42	30	9.783705	10.216295	9.883803	10.116197	10.100098	9.899902	30	18
43	45	9.783746	10.216254	9.883868	10.116132	10.100122	9.899878	15	17
44	26	9.783788	10.216212	9.883934	10.116066	10.100146	9.899854	34	16
45	15	9.783829	10.216171	9.883999	10.116001	10.100170	9.899830	45	15
46	30	9.783870	10.216130	9.884065	10.115935	10.100194	9.899806	30	14
47	45	9.783911	10.216089	9.884130	10.115870	10.100219	9.899781	15	13
48	27	9.783953	10.216047	9.884196	10.115804	10.100243	9.899757	33	12
49	15	9.783994	10.216006	9.884261	10.115739	10.100267	9.899733	45	11
50	30	9.784035	10.215965	9.884326	10.115674	10.100291	9.899709	30	10
51	45	9.784076	10.215924	9.884392	10.115608	10.100315	9.899685	15	9
52	28	9.784118	10.215882	9.884457	10.115543	10.100340	9.899660	32	8
53	15	9.784159	10.215841	9.884523	10.115477	10.100364	9.899636	45	7
54	30	9.784200	10.215800	9.884588	10.115412	10.100388	9.899612	30	6
55	45	9.784241	10.215759	9.884653	10.115347	10.100412	9.899588	15	5
56	29	9.784282	10.215718	9.884719	10.115281	10.100436	9.899564	31	4
57	15	9.784324	10.215676	9.884784	10.115216	10.100461	9.899539	45	3
58	30	9.784365	10.215635	9.884850	10.115150	10.100485	9.899515	30	2
59	45	9.784406	10.215594	9.884915	10.115085	10.100509	9.899491	15	1
60	30	9.784447	10.215553	9.884980	10.115020	10.100533	9.899467	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 30 ^m .		LOG. SINES, &c.						52 deg.	

2 nd 30 ^m .		LOG. SINES, &c. (L.)						37 deg.		
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"	sec.
0	30	9.784447	10.215553	9.884980	10.115020	10.100533	9.899467	30		60
1	15	9.784488	10.215512	9.885046	10.114954	10.100558	9.899442	45		59
2	30	9.784529	10.215471	9.885111	10.114889	10.100582	9.899418	30		58
3	45	9.784571	10.215429	9.885177	10.114823	10.100606	9.899394	15		57
4	31	9.784612	10.215388	9.885242	10.114758	10.100630	9.899370	29		56
5	15	9.784653	10.215347	9.885307	10.114693	10.100655	9.899345	45		55
6	30	9.784694	10.215306	9.885373	10.114627	10.100679	9.899321	30		54
7	45	9.784735	10.215265	9.885438	10.114562	10.100703	9.899297	15		53
8	32	9.784776	10.215224	9.885503	10.114497	10.100727	9.899273	28		52
9	15	9.784817	10.215183	9.885569	10.114431	10.100752	9.899248	45		51
10	30	9.784858	10.215142	9.885634	10.114366	10.100776	9.899224	30		50
11	45	9.784899	10.215101	9.885700	10.114300	10.100800	9.899200	15		49
12	33	9.784941	10.215059	9.885765	10.114235	10.100824	9.899176	27		48
13	15	9.784982	10.215018	9.885830	10.114170	10.100849	9.899151	45		47
14	30	9.785023	10.214977	9.885896	10.114104	10.100873	9.899127	30		46
15	45	9.785064	10.214936	9.885961	10.114039	10.100897	9.899103	15		45
16	34	9.785105	10.214895	9.886026	10.113974	10.100922	9.899078	26		44
17	15	9.785146	10.214854	9.886092	10.113908	10.100946	9.899054	45		43
18	30	9.785187	10.214813	9.886157	10.113843	10.100970	9.899030	30		42
19	45	9.785228	10.214772	9.886222	10.113778	10.100995	9.899005	15		41
20	35	9.785269	10.214731	9.886288	10.113712	10.101019	9.898981	25		40
21	15	9.785310	10.214690	9.886353	10.113647	10.101043	9.898957	45		39
22	30	9.785351	10.214649	9.886418	10.113582	10.101067	9.898933	30		38
23	45	9.785392	10.214608	9.886484	10.113516	10.101092	9.898908	15		37
24	36	9.785433	10.214567	9.886549	10.113451	10.101116	9.898884	24		36
25	15	9.785474	10.214526	9.886614	10.113386	10.101140	9.898860	45		35
26	30	9.785515	10.214485	9.886680	10.113320	10.101165	9.898835	30		34
27	45	9.785556	10.214444	9.886745	10.113255	10.101189	9.898811	15		33
28	37	9.785597	10.214403	9.886810	10.113190	10.101213	9.898787	23		32
29	15	9.785638	10.214362	9.886876	10.113124	10.101238	9.898762	45		31
30	30	9.785679	10.214321	9.886941	10.113059	10.101262	9.898738	30		30
31	45	9.785720	10.214280	9.887006	10.112994	10.101286	9.898714	15		29
32	38	9.785761	10.214239	9.887072	10.112928	10.101311	9.898689	22		28
33	15	9.785802	10.214198	9.887137	10.112863	10.101335	9.898665	45		27
34	30	9.785843	10.214157	9.887202	10.112798	10.101359	9.898641	30		26
35	45	9.785884	10.214116	9.887268	10.112732	10.101384	9.898616	15		25
36	39	9.785925	10.214075	9.887333	10.112667	10.101408	9.898592	21		24
37	15	9.785966	10.214034	9.887398	10.112602	10.101433	9.898567	45		23
38	30	9.786007	10.213993	9.887464	10.112536	10.101457	9.898543	30		22
39	45	9.786048	10.213952	9.887529	10.112471	10.101481	9.898519	15		21
40	40	9.786089	10.213911	9.887594	10.112406	10.101506	9.898494	20		20
41	15	9.786129	10.213871	9.887659	10.112341	10.101530	9.898470	45		19
42	30	9.786170	10.213830	9.887725	10.112275	10.101554	9.898446	30		18
43	45	9.786211	10.213789	9.887790	10.112210	10.101579	9.898421	15		17
44	41	9.786252	10.213748	9.887855	10.112145	10.101603	9.898397	19		16
45	15	9.786293	10.213707	9.887921	10.112079	10.101628	9.898372	45		15
46	30	9.786334	10.213666	9.887986	10.112014	10.101652	9.898348	30		14
47	45	9.786375	10.213625	9.888051	10.111949	10.101676	9.898324	15		13
48	42	9.786416	10.213584	9.888116	10.111884	10.101701	9.898299	18		12
49	15	9.786456	10.213544	9.888182	10.111818	10.101725	9.898275	45		11
50	30	9.786497	10.213503	9.888247	10.111753	10.101750	9.898250	30		10
51	45	9.786538	10.213462	9.888312	10.111688	10.101774	9.898226	15		9
52	43	9.786579	10.213421	9.888377	10.111623	10.101799	9.898201	17		8
53	15	9.786620	10.213380	9.888443	10.111557	10.101823	9.898177	45		7
54	30	9.786661	10.213339	9.888508	10.111492	10.101847	9.898153	30		6
55	45	9.786702	10.213298	9.888573	10.111427	10.101872	9.898128	15		5
56	44	9.786742	10.213258	9.888639	10.111361	10.101896	9.898104	16		4
57	15	9.786783	10.213217	9.888704	10.111296	10.101921	9.898079	45		3
58	30	9.786824	10.213176	9.888769	10.111231	10.101945	9.898055	30		2
59	45	9.786865	10.213135	9.888834	10.111166	10.101970	9.898030	15		1
60	45	9.786906	10.213094	9.888900	10.111100	10.101994	9.898006	15		0
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"	sec.
3 rd 29 ^m		LOG. SINES, &c.						52 deg.		

2 ^h 31 ^m .		LOG. SINES, &c. (L.)						37 deg.	
sec.	"	sine.	coscant.	laurent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.786906	10.213094	9.888900	10.111100	10.101994	9.898006	15	60
1	15	9.786946	10.213054	9.888965	10.111035	10.102018	9.897982	45	59
2	30	9.786987	10.213013	9.889030	10.110970	10.102043	9.897957	30	58
3	45	9.787028	10.212972	9.889095	10.110905	10.102067	9.897933	15	57
4	46	9.787069	10.212931	9.889160	10.110840	10.102092	9.897908	14	56
5	15	9.787109	10.212891	9.889226	10.110774	10.102116	9.897884	45	55
6	30	9.787150	10.212850	9.889291	10.110709	10.102141	9.897859	30	54
7	45	9.787191	10.212809	9.889356	10.110644	10.102165	9.897835	15	53
8	47	9.787232	10.212768	9.889421	10.110579	10.102190	9.897810	13	52
9	15	9.787272	10.212728	9.889487	10.110513	10.102214	9.897786	45	51
10	30	9.787313	10.212687	9.889552	10.110448	10.102239	9.897761	30	50
11	45	9.787354	10.212646	9.889617	10.110383	10.102263	9.897737	15	49
12	48	9.787395	10.212605	9.889682	10.110318	10.102288	9.897712	12	48
13	15	9.787435	10.212565	9.889747	10.110253	10.102312	9.897688	45	47
14	30	9.787476	10.212524	9.889813	10.110187	10.102337	9.897663	30	46
15	45	9.787517	10.212483	9.889878	10.110122	10.102361	9.897639	15	45
16	49	9.787557	10.212443	9.889943	10.110057	10.102386	9.897614	11	44
17	15	9.787598	10.212402	9.890008	10.109992	10.102410	9.897590	45	43
18	30	9.787639	10.212361	9.890074	10.109926	10.102435	9.897565	30	42
19	45	9.787679	10.212321	9.890139	10.109861	10.102459	9.897541	15	41
20	50	9.787720	10.212280	9.890204	10.109796	10.102484	9.897516	10	40
21	15	9.787761	10.212239	9.890269	10.109731	10.102508	9.897492	45	39
22	30	9.787801	10.212199	9.890334	10.109666	10.102533	9.897467	30	38
23	45	9.787842	10.212158	9.890399	10.109601	10.102557	9.897443	15	37
24	51	9.787883	10.212117	9.890465	10.109535	10.102582	9.897418	9	36
25	15	9.787923	10.212077	9.890530	10.109470	10.102607	9.897393	45	35
26	30	9.787964	10.212036	9.890595	10.109405	10.102631	9.897369	30	34
27	45	9.788005	10.211995	9.890660	10.109340	10.102656	9.897344	15	33
28	52	9.788045	10.211955	9.890725	10.109275	10.102680	9.897320	8	32
29	15	9.788086	10.211914	9.890791	10.109209	10.102705	9.897295	45	31
30	30	9.788126	10.211874	9.890856	10.109144	10.102729	9.897271	30	30
31	45	9.788167	10.211833	9.890921	10.109079	10.102754	9.897246	15	29
32	53	9.788208	10.211792	9.890986	10.109014	10.102778	9.897222	7	28
33	15	9.788248	10.211752	9.891051	10.108949	10.102803	9.897197	45	27
34	30	9.788289	10.211711	9.891116	10.108884	10.102828	9.897172	30	26
35	45	9.788329	10.211671	9.891182	10.108818	10.102852	9.897148	15	25
36	54	9.788370	10.211630	9.891247	10.108753	10.102877	9.897123	6	24
37	15	9.788411	10.211589	9.891312	10.108688	10.102901	9.897099	45	23
38	30	9.788451	10.211549	9.891377	10.108623	10.102926	9.897074	30	22
39	45	9.788492	10.211508	9.891442	10.108558	10.102951	9.897049	15	21
40	55	9.788532	10.211468	9.891507	10.108493	10.102975	9.897025	5	20
41	15	9.788573	10.211427	9.891572	10.108428	10.103000	9.897000	45	19
42	30	9.788613	10.211387	9.891638	10.108362	10.103024	9.896976	30	18
43	45	9.788654	10.211346	9.891703	10.108297	10.103049	9.896951	15	17
44	56	9.788694	10.211306	9.891768	10.108232	10.103074	9.896926	4	16
45	15	9.788735	10.211265	9.891833	10.108167	10.103098	9.896902	45	15
46	30	9.788775	10.211225	9.891898	10.108102	10.103123	9.896877	30	14
47	45	9.788816	10.211184	9.891963	10.108037	10.103147	9.896853	15	13
48	57	9.788856	10.211144	9.892028	10.107972	10.103172	9.896828	3	12
49	15	9.788897	10.211103	9.892094	10.107906	10.103197	9.896803	45	11
50	30	9.788937	10.211063	9.892159	10.107841	10.103221	9.896779	30	10
51	45	9.788978	10.211022	9.892224	10.107776	10.103246	9.896754	15	9
52	58	9.789018	10.210982	9.892289	10.107711	10.103271	9.896729	2	8
53	15	9.789059	10.210941	9.892354	10.107646	10.103295	9.896705	45	7
54	30	9.789099	10.210901	9.892419	10.107581	10.103320	9.896680	30	6
55	45	9.789140	10.210860	9.892484	10.107516	10.103345	9.896655	15	5
56	59	9.789180	10.210820	9.892549	10.107451	10.103369	9.896631	1	4
57	15	9.789221	10.210779	9.892614	10.107386	10.103394	9.896606	45	3
58	30	9.789261	10.210739	9.892680	10.107320	10.103419	9.896581	30	2
59	45	9.789302	10.210698	9.892745	10.107255	10.103443	9.896557	15	1
60	60	9.789342	10.210658	9.892810	10.107190	10.103468	9.896532	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	"	sec.
3 ^h 28 ^m .		LOG. SINES, &c.						52 deg.	

2 nd 32 ^m .		LOG. SINES, &c. (L.)						38 deg.	
sec.	"	sine.	coscant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.789342	10.210658	9.892810	10.107190	10.103468	9.896532	60	60
1	15	9.789382	10.210618	9.892875	10.107125	10.103493	9.896507	45	59
2	30	9.789423	10.210577	9.892940	10.107060	10.103517	9.896483	30	58
3	45	9.789463	10.210537	9.893005	10.106995	10.103542	9.896458	15	57
4	1	9.789504	10.210496	9.893070	10.106930	10.103567	9.896433	59	56
5	15	9.789544	10.210456	9.893135	10.106865	10.103591	9.896409	45	55
6	30	9.789584	10.210416	9.893200	10.106800	10.103616	9.896384	30	54
7	45	9.789625	10.210375	9.893265	10.106735	10.103641	9.896359	15	53
8	2	9.789665	10.210335	9.893331	10.106669	10.103665	9.896335	58	52
9	15	9.789706	10.210294	9.893396	10.106604	10.103690	9.896311	45	51
10	30	9.789746	10.210254	9.893461	10.106539	10.103715	9.896285	30	50
11	45	9.789786	10.210214	9.893526	10.106474	10.103740	9.896260	15	49
12	3	9.789827	10.210173	9.893591	10.106409	10.103764	9.896236	57	48
13	15	9.789867	10.210133	9.893656	10.106344	10.103789	9.896211	45	47
14	30	9.789907	10.210093	9.893721	10.106279	10.103814	9.896186	30	46
15	45	9.789948	10.210052	9.893786	10.106214	10.103838	9.896162	15	45
16	4	9.789988	10.210012	9.893851	10.106149	10.103863	9.896137	56	44
17	15	9.790028	10.209972	9.893916	10.106084	10.103888	9.896112	45	43
18	30	9.790069	10.209931	9.893981	10.106019	10.103913	9.896087	30	42
19	45	9.790109	10.209891	9.894046	10.105954	10.103937	9.896063	15	41
20	5	9.790149	10.209851	9.894111	10.105889	10.103962	9.896038	55	40
21	15	9.790190	10.209810	9.894176	10.105824	10.103987	9.896013	45	39
22	30	9.790230	10.209770	9.894241	10.105759	10.104012	9.895988	30	38
23	45	9.790270	10.209730	9.894306	10.105694	10.104036	9.895964	15	37
24	6	9.790310	10.209690	9.894371	10.105629	10.104061	9.895939	54	36
25	15	9.790351	10.209649	9.894437	10.105563	10.104086	9.895914	45	35
26	30	9.790391	10.209609	9.894502	10.105498	10.104111	9.895889	30	34
27	45	9.790431	10.209569	9.894567	10.105433	10.104135	9.895865	15	33
28	7	9.790471	10.209529	9.894632	10.105368	10.104160	9.895840	53	32
29	15	9.790512	10.209488	9.894697	10.105303	10.104185	9.895815	45	31
30	30	9.790552	10.209448	9.894762	10.105238	10.104210	9.895790	30	30
31	45	9.790592	10.209408	9.894827	10.105173	10.104235	9.895765	15	29
32	8	9.790632	10.209368	9.894892	10.105108	10.104259	9.895741	52	28
33	15	9.790673	10.209327	9.894957	10.105043	10.104284	9.895716	45	27
34	30	9.790713	10.209287	9.895022	10.104978	10.104309	9.895691	30	26
35	45	9.790753	10.209247	9.895087	10.104913	10.104334	9.895666	15	25
36	9	9.790793	10.209207	9.895152	10.104848	10.104359	9.895641	51	24
37	15	9.790833	10.209167	9.895217	10.104783	10.104383	9.895617	45	23
38	30	9.790874	10.209126	9.895282	10.104718	10.104408	9.895592	30	22
39	45	9.790914	10.209086	9.895347	10.104653	10.104433	9.895567	15	21
40	10	9.790954	10.209046	9.895412	10.104588	10.104458	9.895542	50	20
41	15	9.790994	10.209006	9.895477	10.104523	10.104483	9.895517	45	19
42	30	9.791034	10.208966	9.895542	10.104458	10.104508	9.895492	30	18
43	45	9.791075	10.208925	9.895607	10.104393	10.104532	9.895468	15	17
44	11	9.791115	10.208885	9.895672	10.104328	10.104557	9.895443	49	16
45	15	9.791155	10.208845	9.895737	10.104263	10.104582	9.895418	45	15
46	30	9.791195	10.208805	9.895802	10.104198	10.104607	9.895393	30	14
47	45	9.791235	10.208765	9.895867	10.104133	10.104632	9.895368	15	13
48	12	9.791275	10.208725	9.895932	10.104068	10.104657	9.895343	48	12
49	15	9.791315	10.208685	9.895997	10.104003	10.104681	9.895319	45	11
50	30	9.791356	10.208644	9.896062	10.103938	10.104706	9.895294	30	10
51	45	9.791396	10.208604	9.896127	10.103873	10.104731	9.895269	15	9
52	13	9.791436	10.208564	9.896192	10.103808	10.104756	9.895244	47	8
53	15	9.791476	10.208524	9.896257	10.103743	10.104781	9.895219	45	7
54	30	9.791516	10.208484	9.896322	10.103678	10.104806	9.895194	30	6
55	45	9.791556	10.208444	9.896387	10.103613	10.104831	9.895169	15	5
56	14	9.791596	10.208404	9.896452	10.103548	10.104856	9.895144	46	4
57	15	9.791636	10.208364	9.896517	10.103483	10.104880	9.895120	45	3
58	30	9.791676	10.208324	9.896582	10.103418	10.104905	9.895095	30	2
59	45	9.791716	10.208284	9.896647	10.103353	10.104930	9.895070	15	1
60	15	9.791757	10.208243	9.896712	10.103288	10.104955	9.895045	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	coscant.	sine.	"	sec.
3 rd 27 ^m .		LOG. SINES, &c.						51 deg.	

2 ^h 33 ^m .		LOG. SINES, &c. (L.)						38 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.791757	10.208243	9.896712	10.103288	10.104955	9.895045	45	60
1	15	9.791797	10.208203	9.896777	10.103223	10.104980	9.895020	45	59
2	30	9.791837	10.208163	9.896841	10.103159	10.105005	9.894995	30	58
3	45	9.791877	10.208123	9.896906	10.103094	10.105030	9.894970	15	57
4	16	9.791917	10.208083	9.896971	10.103029	10.105055	9.894945	44	56
5	15	9.791957	10.208043	9.897036	10.102964	10.105080	9.894920	45	55
6	30	9.791997	10.208003	9.897101	10.102899	10.105105	9.894895	30	54
7	45	9.792037	10.207963	9.897166	10.102834	10.105129	9.894871	15	53
8	17	9.792077	10.207923	9.897231	10.102769	10.105154	9.894846	43	52
9	15	9.792117	10.207883	9.897296	10.102704	10.105179	9.894821	45	51
10	30	9.792157	10.207843	9.897361	10.102639	10.105204	9.894796	30	50
11	45	9.792197	10.207803	9.897426	10.102574	10.105229	9.894771	15	49
12	18	9.792237	10.207763	9.897491	10.102509	10.105254	9.894746	42	48
13	15	9.792277	10.207723	9.897556	10.102444	10.105279	9.894721	45	47
14	30	9.792317	10.207683	9.897621	10.102379	10.105304	9.894696	30	46
15	45	9.792357	10.207643	9.897686	10.102314	10.105329	9.894671	15	45
16	19	9.792397	10.207603	9.897751	10.102249	10.105354	9.894646	41	44
17	15	9.792437	10.207563	9.897816	10.102184	10.105379	9.894621	45	43
18	30	9.792477	10.207523	9.897880	10.102120	10.105404	9.894596	30	42
19	45	9.792517	10.207483	9.897945	10.102055	10.105429	9.894571	15	41
20	20	9.792557	10.207443	9.898010	10.101990	10.105454	9.894546	40	40
21	15	9.792597	10.207403	9.898075	10.101925	10.105479	9.894521	45	39
22	30	9.792636	10.207363	9.898140	10.101860	10.105504	9.894496	30	38
23	45	9.792676	10.207323	9.898205	10.101795	10.105529	9.894471	15	37
24	21	9.792716	10.207283	9.898270	10.101730	10.105554	9.894446	39	36
25	15	9.792756	10.207243	9.898335	10.101665	10.105579	9.894421	45	35
26	30	9.792796	10.207203	9.898400	10.101600	10.105604	9.894396	30	34
27	45	9.792836	10.207163	9.898465	10.101535	10.105629	9.894371	15	33
28	22	9.792876	10.207123	9.898530	10.101470	10.105654	9.894346	38	32
29	15	9.792916	10.207083	9.898594	10.101406	10.105679	9.894321	45	31
30	30	9.792956	10.207043	9.898659	10.101341	10.105704	9.894296	30	30
31	45	9.792996	10.207003	9.898724	10.101276	10.105729	9.894271	15	29
32	23	9.793035	10.206963	9.898789	10.101211	10.105754	9.894246	37	28
33	15	9.793075	10.206923	9.898854	10.101146	10.105779	9.894221	45	27
34	30	9.793115	10.206883	9.898919	10.101081	10.105804	9.894196	30	26
35	45	9.793155	10.206843	9.898984	10.101016	10.105829	9.894171	15	25
36	24	9.793195	10.206803	9.899049	10.100951	10.105854	9.894146	36	24
37	15	9.793235	10.206763	9.899114	10.100886	10.105879	9.894121	45	23
38	30	9.793275	10.206723	9.899178	10.100822	10.105904	9.894096	30	22
39	45	9.793314	10.206683	9.899243	10.100757	10.105929	9.894071	15	21
40	25	9.793354	10.206643	9.899308	10.100692	10.105954	9.894046	35	20
41	15	9.793394	10.206603	9.899373	10.100627	10.105979	9.894021	45	19
42	30	9.793434	10.206563	9.899438	10.100562	10.106004	9.893996	30	18
43	45	9.793474	10.206523	9.899503	10.100497	10.106029	9.893971	15	17
44	26	9.793513	10.206483	9.899568	10.100432	10.106054	9.893946	34	16
45	15	9.793553	10.206443	9.899632	10.100368	10.106079	9.893921	45	15
46	30	9.793593	10.206403	9.899697	10.100303	10.106104	9.893896	30	14
47	45	9.793633	10.206363	9.899762	10.100238	10.106129	9.893871	15	13
48	27	9.793673	10.206323	9.899827	10.100173	10.106154	9.893846	33	12
49	15	9.793712	10.206283	9.899892	10.100108	10.106180	9.893820	45	11
50	30	9.793752	10.206243	9.899957	10.100043	10.106205	9.893795	30	10
51	45	9.793792	10.206203	9.900022	10.099978	10.106230	9.893770	15	9
52	28	9.793832	10.206163	9.900086	10.099914	10.106255	9.893745	32	8
53	15	9.793871	10.206123	9.900151	10.099849	10.106280	9.893720	45	7
54	30	9.793911	10.206083	9.900216	10.099784	10.106305	9.893695	30	6
55	45	9.793951	10.206043	9.900281	10.099719	10.106330	9.893670	15	5
56	29	9.793991	10.206003	9.900346	10.099654	10.106355	9.893645	31	4
57	15	9.794030	10.205970	9.900411	10.099589	10.106380	9.893620	45	3
58	30	9.794070	10.205930	9.900475	10.099525	10.106405	9.893595	30	2
59	45	9.794110	10.205890	9.900540	10.099460	10.106431	9.893569	15	1
60	30	9.794150	10.205850	9.900605	10.099395	10.106456	9.893544	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 26 ^m .		LOG. SINES, &c.						51 deg.	

2 ^h 34 ^m .		LOG. SINES, &c. (t.)						88 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	9.794150	10.205850	9.900605	10.099395	10.106456	9.893544	30	60
1	15	9.794189	10.205811	9.900670	10.099330	10.106481	9.893519	45	59
2	30	9.794229	10.205771	9.900735	10.099265	10.106506	9.893494	30	58
3	45	9.794269	10.205731	9.900800	10.099200	10.106531	9.893469	15	57
4	31	9.794308	10.205692	9.900864	10.099136	10.106556	9.893444	29	56
5	15	9.794348	10.205652	9.900929	10.099071	10.106581	9.893419	45	55
6	30	9.794388	10.205612	9.900994	10.099006	10.106606	9.893394	30	54
7	45	9.794427	10.205573	9.901059	10.098941	10.106632	9.893368	15	53
8	32	9.794467	10.205533	9.901124	10.098876	10.106657	9.893343	28	52
9	15	9.794507	10.205493	9.901189	10.098811	10.106682	9.893318	45	51
10	30	9.794546	10.205454	9.901253	10.098747	10.106707	9.893293	30	50
11	45	9.794586	10.205414	9.901318	10.098682	10.106732	9.893268	15	49
12	33	9.794626	10.205374	9.901383	10.098617	10.106757	9.893243	27	48
13	15	9.794665	10.205335	9.901448	10.098552	10.106783	9.893217	45	47
14	30	9.794705	10.205295	9.901513	10.098487	10.106808	9.893192	30	46
15	45	9.794744	10.205256	9.901577	10.098423	10.106833	9.893167	15	45
16	34	9.794784	10.205216	9.901642	10.098358	10.106858	9.893142	26	44
17	15	9.794824	10.205176	9.901707	10.098293	10.106883	9.893117	45	43
18	30	9.794863	10.205137	9.901772	10.098228	10.106908	9.893092	30	42
19	45	9.794903	10.205097	9.901836	10.098164	10.106934	9.893066	15	41
20	35	9.794942	10.205058	9.901901	10.098099	10.106959	9.893041	25	40
21	15	9.794982	10.205018	9.901966	10.098034	10.106984	9.893016	45	39
22	30	9.795022	10.204978	9.902031	10.097969	10.107009	9.892991	30	38
23	45	9.795061	10.204939	9.902096	10.097904	10.107034	9.892966	15	37
24	36	9.795101	10.204899	9.902160	10.097840	10.107060	9.892940	24	36
25	15	9.795140	10.204860	9.902225	10.097775	10.107085	9.892915	45	35
26	30	9.795180	10.204820	9.902290	10.097710	10.107110	9.892890	30	34
27	45	9.795219	10.204781	9.902355	10.097645	10.107135	9.892865	15	33
28	37	9.795259	10.204741	9.902419	10.097581	10.107161	9.892839	23	32
29	15	9.795298	10.204702	9.902484	10.097516	10.107186	9.892814	45	31
30	30	9.795338	10.204662	9.902549	10.097451	10.107211	9.892789	30	30
31	45	9.795378	10.204622	9.902614	10.097386	10.107236	9.892764	15	29
32	38	9.795417	10.204583	9.902679	10.097321	10.107262	9.892738	22	28
33	15	9.795457	10.204543	9.902743	10.097257	10.107287	9.892713	45	27
34	30	9.795496	10.204504	9.902808	10.097192	10.107312	9.892688	30	26
35	45	9.795536	10.204464	9.902873	10.097127	10.107337	9.892663	15	25
36	39	9.795575	10.204425	9.902938	10.097062	10.107363	9.892637	21	24
37	15	9.795615	10.204385	9.903002	10.096998	10.107388	9.892612	45	23
38	30	9.795654	10.204346	9.903067	10.096933	10.107413	9.892587	30	22
39	45	9.795694	10.204306	9.903132	10.096868	10.107438	9.892562	15	21
40	40	9.795733	10.204267	9.903197	10.096803	10.107464	9.892536	20	20
41	15	9.795772	10.204228	9.903261	10.096739	10.107489	9.892511	45	19
42	30	9.795812	10.204188	9.903326	10.096674	10.107514	9.892486	30	18
43	45	9.795851	10.204149	9.903391	10.096609	10.107539	9.892461	15	17
44	41	9.795891	10.204109	9.903455	10.096545	10.107565	9.892435	19	16
45	15	9.795930	10.204070	9.903520	10.096480	10.107590	9.892410	45	15
46	30	9.795970	10.204030	9.903585	10.096415	10.107615	9.892385	30	14
47	45	9.796009	10.203991	9.903650	10.096350	10.107641	9.892359	15	13
48	42	9.796049	10.203951	9.903714	10.096286	10.107666	9.892334	18	12
49	15	9.796088	10.203912	9.903779	10.096221	10.107691	9.892309	45	11
50	30	9.796127	10.203873	9.903844	10.096156	10.107716	9.892284	30	10
51	45	9.796167	10.203833	9.903909	10.096091	10.107742	9.892258	15	9
52	43	9.796206	10.203794	9.903973	10.096027	10.107767	9.892233	17	8
53	15	9.796246	10.203754	9.904038	10.095962	10.107792	9.892208	45	7
54	30	9.796285	10.203715	9.904103	10.095897	10.107818	9.892183	30	6
55	45	9.796324	10.203676	9.904167	10.095833	10.107843	9.892157	15	5
56	44	9.796364	10.203636	9.904232	10.095768	10.107868	9.892132	16	4
57	15	9.796403	10.203597	9.904297	10.095703	10.107894	9.892106	45	3
58	30	9.796442	10.203558	9.904362	10.095638	10.107919	9.892081	30	2
59	45	9.796482	10.203518	9.904426	10.095574	10.107944	9.892056	15	1
60	45	9.796521	10.203479	9.904491	10.095509	10.107970	9.892030	15	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 25 ^m .		LOG. SINES, &c.						51 deg.	

2 ^h 35 ^m .		LOG. SINES, &c. (t.)						88 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"
0	45	9.796521	10.203479	9.904491	10.095509	10.107970	9.892030		11
1	15	9.796561	10.203439	9.904556	10.095444	10.107995	9.892005	45	
2	30	9.796600	10.203400	9.904620	10.095380	10.108020	9.891980	30	
3	45	9.796639	10.203361	9.904685	10.095315	10.108046	9.891954	15	
4	46	9.796679	10.203321	9.904750	10.095250	10.108071	9.891929		14
5	15	9.796718	10.203282	9.904814	10.095186	10.108097	9.891903	45	
6	30	9.796757	10.203243	9.904879	10.095121	10.108122	9.891878	30	
7	45	9.796797	10.203203	9.904944	10.095056	10.108147	9.891853	15	
8	47	9.796836	10.203164	9.905008	10.094992	10.108173	9.891827		13
9	15	9.796875	10.203125	9.905073	10.094927	10.108198	9.891802	45	
10	30	9.796914	10.203086	9.905138	10.094862	10.108223	9.891777	30	
11	45	9.796954	10.203046	9.905202	10.094798	10.108249	9.891751	15	
12	48	9.796993	10.203007	9.905267	10.094733	10.108274	9.891726		12
13	15	9.797032	10.202968	9.905332	10.094668	10.108300	9.891700	45	
14	30	9.797072	10.202928	9.905396	10.094604	10.108325	9.891675	30	
15	45	9.797111	10.202889	9.905461	10.094539	10.108350	9.891650	15	
16	49	9.797150	10.202850	9.905526	10.094474	10.108376	9.891624		11
17	15	9.797189	10.202811	9.905590	10.094410	10.108401	9.891599	45	
18	30	9.797229	10.202771	9.905655	10.094345	10.108427	9.891573	30	
19	45	9.797268	10.202732	9.905720	10.094280	10.108452	9.891548	15	
20	50	9.797307	10.202693	9.905784	10.094216	10.108477	9.891523		10
21	15	9.797346	10.202654	9.905849	10.094151	10.108503	9.891497	45	
22	30	9.797386	10.202614	9.905914	10.094086	10.108528	9.891472	30	
23	45	9.797425	10.202575	9.905978	10.094022	10.108554	9.891446	15	
24	51	9.797464	10.202536	9.906043	10.093957	10.108579	9.891421		9
25	15	9.797503	10.202497	9.906108	10.093892	10.108605	9.891395	45	
26	30	9.797542	10.202458	9.906172	10.093828	10.108630	9.891370	30	
27	45	9.797582	10.202418	9.906237	10.093763	10.108656	9.891344	15	
28	52	9.797621	10.202379	9.906302	10.093698	10.108681	9.891319		8
29	15	9.797660	10.202340	9.906366	10.093634	10.108706	9.891294	45	
30	30	9.797699	10.202301	9.906431	10.093569	10.108732	9.891268	30	
31	45	9.797738	10.202262	9.906496	10.093504	10.108757	9.891243	15	
32	53	9.797777	10.202223	9.906560	10.093440	10.108783	9.891217		7
33	15	9.797817	10.202183	9.906625	10.093375	10.108808	9.891192	45	
34	30	9.797856	10.202144	9.906689	10.093311	10.108834	9.891166	30	
35	45	9.797895	10.202105	9.906754	10.093246	10.108859	9.891141	15	
36	54	9.797934	10.202066	9.906819	10.093181	10.108885	9.891115		6
37	15	9.797973	10.202027	9.906883	10.093117	10.108910	9.891090	45	
38	30	9.798012	10.201988	9.906948	10.093052	10.108936	9.891064	30	
39	45	9.798051	10.201949	9.907013	10.092987	10.108961	9.891039	15	
40	55	9.798091	10.201909	9.907077	10.092923	10.108987	9.891013		5
41	15	9.798130	10.201870	9.907142	10.092858	10.109012	9.890988	45	
42	30	9.798169	10.201831	9.907206	10.092794	10.109038	9.890962	30	
43	45	9.798208	10.201792	9.907271	10.092729	10.109063	9.890937	15	
44	56	9.798247	10.201753	9.907336	10.092664	10.109089	9.890911		4
45	15	9.798286	10.201714	9.907400	10.092600	10.109114	9.890886	45	
46	30	9.798325	10.201675	9.907465	10.092535	10.109140	9.890860	30	
47	45	9.798364	10.201636	9.907529	10.092471	10.109165	9.890835	15	
48	57	9.798403	10.201597	9.907594	10.092406	10.109191	9.890809		3
49	15	9.798442	10.201558	9.907659	10.092341	10.109216	9.890784	45	
50	30	9.798481	10.201519	9.907723	10.092277	10.109242	9.890758	30	
51	45	9.798521	10.201479	9.907788	10.092212	10.109267	9.890733	15	
52	58	9.798560	10.201440	9.907852	10.092148	10.109293	9.890707		2
53	15	9.798599	10.201401	9.907917	10.092083	10.109319	9.890681	45	
54	30	9.798638	10.201362	9.907982	10.092018	10.109344	9.890656	30	
55	45	9.798677	10.201323	9.908046	10.091954	10.109370	9.890630	15	
56	59	9.798716	10.201284	9.908111	10.091889	10.109395	9.890605		1
57	15	9.798755	10.201245	9.908175	10.091825	10.109421	9.890579	45	
58	30	9.798794	10.201206	9.908240	10.091760	10.109446	9.890554	30	
59	45	9.798833	10.201167	9.908305	10.091695	10.109472	9.890528	15	
60	60	9.798872	10.201128	9.908369	10.091631	10.109497	9.890503		0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"
3 ^h 24 ^m .		LOG. SINES, &c.						51 deg.	

2 ^h 36 ^m .		LOG. SINES, &c. (t.)						39 deg.	
arc.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.798872	10.201128	9.908369	10.091631	10.109497	9.890503	60	60
1	15	9.798911	10.201089	9.908434	10.091566	10.109523	9.890477	45	59
2	30	9.798950	10.201050	9.908498	10.091502	10.109549	9.890451	30	58
3	45	9.798989	10.201011	9.908563	10.091437	10.109574	9.890426	15	57
4	1	9.799028	10.200972	9.908627	10.091373	10.109600	9.890400	59	56
5	15	9.799067	10.200933	9.908692	10.091308	10.109625	9.890375	45	55
6	30	9.799106	10.200894	9.908757	10.091243	10.109651	9.890349	30	54
7	45	9.799145	10.200855	9.908821	10.091179	10.109677	9.890323	15	53
8	2	9.799184	10.200816	9.908886	10.091114	10.109702	9.890298	58	52
9	15	9.799223	10.200777	9.908950	10.091050	10.109728	9.890272	45	51
10	30	9.799261	10.200739	9.909015	10.090985	10.109753	9.890247	30	50
11	45	9.799300	10.200700	9.909079	10.090921	10.109779	9.890221	15	49
12	3	9.799339	10.200661	9.909144	10.090856	10.109805	9.890195	57	48
13	15	9.799378	10.200622	9.909208	10.090792	10.109830	9.890170	45	47
14	30	9.799417	10.200583	9.909273	10.090727	10.109856	9.890144	30	46
15	45	9.799456	10.200544	9.909338	10.090662	10.109882	9.890118	15	45
16	4	9.799495	10.200505	9.909402	10.090598	10.109907	9.890093	56	44
17	15	9.799534	10.200466	9.909467	10.090533	10.109933	9.890067	45	43
18	30	9.799573	10.200427	9.909531	10.090469	10.109958	9.890042	30	42
19	45	9.799612	10.200388	9.909596	10.090404	10.109984	9.890016	15	41
20	5	9.799651	10.200349	9.909660	10.090340	10.110010	9.889990	55	40
21	15	9.799690	10.200310	9.909725	10.090275	10.110035	9.889965	45	39
22	30	9.799728	10.200272	9.909789	10.090211	10.110061	9.889939	30	38
23	45	9.799767	10.200233	9.909854	10.090146	10.110087	9.889913	15	37
24	6	9.799806	10.200194	9.909918	10.090082	10.110112	9.889888	54	36
25	15	9.799845	10.200155	9.909983	10.090017	10.110138	9.889862	45	35
26	30	9.799884	10.200116	9.910047	10.089953	10.110164	9.889836	30	34
27	45	9.799923	10.200077	9.910112	10.089888	10.110189	9.889811	15	33
28	7	9.799962	10.200038	9.910177	10.089823	10.110215	9.889785	53	32
29	15	9.800000	10.200000	9.910241	10.089759	10.110241	9.889759	45	31
30	30	9.800039	10.199961	9.910306	10.089694	10.110266	9.889734	30	30
31	45	9.800078	10.199922	9.910370	10.089630	10.110292	9.889708	15	29
32	8	9.800117	10.199883	9.910435	10.089565	10.110318	9.889682	52	28
33	15	9.800156	10.199844	9.910499	10.089501	10.110344	9.889656	45	27
34	30	9.800194	10.199806	9.910564	10.089436	10.110369	9.889631	30	26
35	45	9.800233	10.199767	9.910628	10.089372	10.110395	9.889605	15	25
36	9	9.800272	10.199728	9.910693	10.089307	10.110421	9.889579	51	24
37	15	9.800311	10.199689	9.910757	10.089243	10.110446	9.889554	45	23
38	30	9.800350	10.199650	9.910822	10.089178	10.110472	9.889528	30	22
39	45	9.800388	10.199612	9.910886	10.089114	10.110498	9.889502	15	21
40	10	9.800427	10.199573	9.910951	10.089049	10.110524	9.889476	50	20
41	15	9.800466	10.199534	9.911015	10.088985	10.110549	9.889451	45	19
42	30	9.800505	10.199495	9.911080	10.088920	10.110575	9.889425	30	18
43	45	9.800543	10.199457	9.911144	10.088856	10.110601	9.889399	15	17
44	11	9.800582	10.199418	9.911209	10.088791	10.110626	9.889374	49	16
45	15	9.800621	10.199379	9.911273	10.088727	10.110652	9.889348	45	15
46	30	9.800660	10.199340	9.911338	10.088662	10.110678	9.889322	30	14
47	45	9.800698	10.199302	9.911402	10.088598	10.110704	9.889296	15	13
48	12	9.800737	10.199263	9.911467	10.088533	10.110729	9.889271	48	12
49	15	9.800776	10.199224	9.911531	10.088469	10.110755	9.889245	45	11
50	30	9.800815	10.199185	9.911596	10.088404	10.110781	9.889219	30	10
51	45	9.800853	10.199147	9.911660	10.088340	10.110807	9.889193	15	9
52	13	9.800892	10.199108	9.911724	10.088276	10.110833	9.889167	47	8
53	15	9.800931	10.199069	9.911789	10.088211	10.110858	9.889142	45	7
54	30	9.800969	10.199031	9.911853	10.088147	10.110884	9.889116	30	6
55	45	9.801008	10.198992	9.911918	10.088082	10.110910	9.889090	15	5
56	14	9.801047	10.198953	9.911982	10.088018	10.110936	9.889064	46	4
57	15	9.801085	10.198915	9.912047	10.087953	10.110961	9.889039	45	3
58	30	9.801124	10.198876	9.912111	10.087889	10.110987	9.889013	30	2
59	45	9.801163	10.198837	9.912176	10.087824	10.111013	9.888987	15	1
60	15	9.801201	10.198799	9.912240	10.087760	10.111039	9.888961	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 23 ^m .		LOG. SINES, &c.						50 deg.	

2 ^h 37 ^m .		LOG. SINES, &c. (t.)						39 deg.
sec.	°	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	°
0	15	9.801201	10.198799	9.912240	10.087760	10.111039	9.888961	41
1	15	9.801240	10.198760	9.912305	10.087695	10.111065	9.888935	45
2	30	9.801279	10.198721	9.912369	10.087631	10.111090	9.888910	30
3	45	9.801317	10.198683	9.912434	10.087566	10.111116	9.888884	15
4	16	9.801356	10.198644	9.912498	10.087502	10.111142	9.888858	44
5	15	9.801395	10.198605	9.912562	10.087438	10.111168	9.888832	45
6	30	9.801433	10.198567	9.912627	10.087373	10.111194	9.888806	30
7	45	9.801472	10.198528	9.912691	10.087309	10.111220	9.888780	15
8	17	9.801511	10.198489	9.912756	10.087244	10.111245	9.888755	43
9	15	9.801549	10.198451	9.912820	10.087180	10.111271	9.888729	45
10	30	9.801588	10.198412	9.912885	10.087115	10.111297	9.888703	30
11	45	9.801626	10.198374	9.912949	10.087051	10.111323	9.888677	15
12	18	9.801665	10.198335	9.913014	10.086986	10.111349	9.888651	42
13	15	9.801703	10.198297	9.913078	10.086922	10.111375	9.888625	45
14	30	9.801742	10.198258	9.913142	10.086858	10.111400	9.888600	30
15	45	9.801781	10.198219	9.913207	10.086793	10.111426	9.888574	15
16	19	9.801819	10.198181	9.913271	10.086729	10.111452	9.888548	41
17	15	9.801858	10.198142	9.913336	10.086664	10.111478	9.888522	45
18	30	9.801896	10.198104	9.913400	10.086600	10.111504	9.888496	30
19	45	9.801935	10.198065	9.913465	10.086535	10.111530	9.888470	15
20	20	9.801973	10.198027	9.913529	10.086471	10.111556	9.888444	40
21	15	9.802012	10.197988	9.913593	10.086407	10.111582	9.888418	45
22	30	9.802050	10.197950	9.913658	10.086342	10.111607	9.888393	30
23	45	9.802089	10.197911	9.913722	10.086278	10.111633	9.888367	15
24	21	9.802128	10.197872	9.913787	10.086213	10.111659	9.888341	39
25	15	9.802166	10.197834	9.913851	10.086149	10.111685	9.888315	45
26	30	9.802205	10.197795	9.913916	10.086084	10.111711	9.888289	30
27	45	9.802243	10.197757	9.913980	10.086020	10.111737	9.888263	15
28	22	9.802282	10.197718	9.914044	10.085956	10.111763	9.888237	38
29	15	9.802320	10.197680	9.914109	10.085891	10.111789	9.888211	45
30	30	9.802359	10.197641	9.914173	10.085827	10.111815	9.888185	30
31	45	9.802397	10.197603	9.914238	10.085762	10.111841	9.888159	15
32	23	9.802435	10.197565	9.914302	10.085698	10.111867	9.888133	37
33	15	9.802474	10.197526	9.914366	10.085634	10.111892	9.888108	45
34	30	9.802512	10.197488	9.914431	10.085569	10.111918	9.888082	30
35	45	9.802551	10.197449	9.914495	10.085505	10.111944	9.888056	15
36	24	9.802589	10.197411	9.914560	10.085440	10.111970	9.888030	36
37	15	9.802628	10.197372	9.914624	10.085376	10.111996	9.888004	45
38	30	9.802666	10.197334	9.914688	10.085312	10.112022	9.887978	30
39	45	9.802705	10.197295	9.914753	10.085247	10.112048	9.887952	15
40	25	9.802743	10.197257	9.914817	10.085183	10.112074	9.887926	35
41	15	9.802782	10.197218	9.914881	10.085119	10.112100	9.887900	45
42	30	9.802820	10.197180	9.914946	10.085054	10.112126	9.887874	30
43	45	9.802858	10.197142	9.915010	10.084990	10.112152	9.887848	15
44	26	9.802897	10.197103	9.915075	10.084925	10.112178	9.887822	34
45	15	9.802935	10.197065	9.915139	10.084861	10.112204	9.887796	45
46	30	9.802974	10.197026	9.915203	10.084797	10.112230	9.887770	30
47	45	9.803012	10.196988	9.915268	10.084732	10.112256	9.887744	15
48	27	9.803050	10.196950	9.915332	10.084668	10.112282	9.887718	33
49	15	9.803089	10.196911	9.915396	10.084604	10.112308	9.887692	45
50	30	9.803127	10.196873	9.915461	10.084539	10.112334	9.887666	30
51	45	9.803165	10.196835	9.915525	10.084475	10.112360	9.887640	15
52	28	9.803204	10.196796	9.915590	10.084410	10.112386	9.887614	32
53	15	9.803242	10.196758	9.915654	10.084346	10.112412	9.887588	45
54	30	9.803280	10.196720	9.915718	10.084282	10.112438	9.887562	30
55	45	9.803319	10.196681	9.915783	10.084217	10.112464	9.887536	15
56	29	9.803357	10.196643	9.915847	10.084153	10.112490	9.887510	31
57	15	9.803396	10.196604	9.915911	10.084089	10.112516	9.887484	45
58	30	9.803434	10.196566	9.915976	10.084024	10.112542	9.887458	30
59	45	9.803472	10.196528	9.916040	10.083960	10.112568	9.887432	15
60	30	9.803510	10.196490	9.916104	10.083896	10.112594	9.887406	30
sec.	°	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	°
3 ^h 22 ^m .		LOG. SINES, &c.						50 deg.

2 ^h 35 ^m .		LOG. SINES, &c. (L.)						39 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	9.803510	10.196490	9.916104	10.083896	10.112594	9.887406	30	60
1	15	9.803549	10.196451	9.916169	10.083831	10.112620	9.887380	45	59
2	30	9.803587	10.196413	9.916233	10.083767	10.112646	9.887354	30	58
3	45	9.803625	10.196375	9.916297	10.083703	10.112672	9.887328	15	57
4	31	9.803664	10.196336	9.916362	10.083638	10.112698	9.887302	29	56
5	15	9.803702	10.196298	9.916426	10.083574	10.112724	9.887276	45	55
6	30	9.803740	10.196260	9.916490	10.083510	10.112750	9.887250	30	54
7	45	9.803779	10.196221	9.916555	10.083445	10.112776	9.887224	15	53
8	32	9.803817	10.196183	9.916619	10.083381	10.112802	9.887198	28	52
9	15	9.803855	10.196145	9.916683	10.083317	10.112828	9.887172	45	51
10	30	9.803893	10.196107	9.916748	10.083252	10.112855	9.887145	30	50
11	45	9.803932	10.196068	9.916812	10.083188	10.112881	9.887119	15	49
12	33	9.803970	10.196030	9.916876	10.083124	10.112907	9.887093	27	48
13	15	9.804008	10.195992	9.916941	10.083059	10.112933	9.887067	45	47
14	30	9.804046	10.195954	9.917005	10.082995	10.112959	9.887041	30	46
15	45	9.804085	10.195915	9.917069	10.082931	10.112985	9.887015	15	45
16	34	9.804123	10.195877	9.917134	10.082866	10.113011	9.886989	26	44
17	15	9.804161	10.195839	9.917198	10.082802	10.113037	9.886963	45	43
18	30	9.804199	10.195801	9.917262	10.082738	10.113063	9.886937	30	42
19	45	9.804237	10.195763	9.917327	10.082673	10.113089	9.886911	15	41
20	35	9.804276	10.195724	9.917391	10.082609	10.113115	9.886885	25	40
21	15	9.804314	10.195686	9.917455	10.082545	10.113142	9.886858	45	39
22	30	9.804352	10.195648	9.917520	10.082480	10.113168	9.886832	30	38
23	45	9.804390	10.195610	9.917584	10.082416	10.113194	9.886806	15	37
24	36	9.804428	10.195572	9.917648	10.082352	10.113220	9.886780	24	36
25	15	9.804467	10.195533	9.917713	10.082287	10.113246	9.886754	45	35
26	30	9.804505	10.195495	9.917777	10.082223	10.113272	9.886728	30	34
27	45	9.804543	10.195457	9.917841	10.082159	10.113298	9.886702	15	33
28	37	9.804581	10.195419	9.917905	10.082095	10.113324	9.886676	23	32
29	15	9.804619	10.195381	9.917970	10.082030	10.113351	9.886649	45	31
30	30	9.804657	10.195343	9.918034	10.081966	10.113377	9.886623	30	30
31	45	9.804695	10.195305	9.918098	10.081902	10.113403	9.886597	15	29
32	38	9.804734	10.195266	9.918163	10.081837	10.113429	9.886571	22	28
33	15	9.804772	10.195228	9.918227	10.081773	10.113455	9.886545	45	27
34	30	9.804810	10.195190	9.918291	10.081709	10.113481	9.886519	30	26
35	45	9.804848	10.195152	9.918355	10.081645	10.113508	9.886492	15	25
36	39	9.804886	10.195114	9.918420	10.081580	10.113534	9.886466	21	24
37	15	9.804924	10.195076	9.918484	10.081516	10.113560	9.886440	45	23
38	30	9.804962	10.195038	9.918548	10.081452	10.113586	9.886414	30	22
39	45	9.805000	10.195000	9.918613	10.081387	10.113612	9.886388	15	21
40	40	9.805038	10.194962	9.918677	10.081323	10.113638	9.886362	20	20
41	15	9.805077	10.194923	9.918741	10.081259	10.113665	9.886335	45	19
42	30	9.805115	10.194885	9.918805	10.081195	10.113691	9.886309	30	18
43	45	9.805153	10.194847	9.918870	10.081130	10.113717	9.886283	15	17
44	41	9.805191	10.194809	9.918934	10.081066	10.113743	9.886257	19	16
45	15	9.805229	10.194771	9.918998	10.081002	10.113769	9.886231	45	15
46	30	9.805267	10.194733	9.919063	10.080937	10.113796	9.886204	30	14
47	45	9.805305	10.194695	9.919127	10.080873	10.113822	9.886178	15	13
48	42	9.805343	10.194657	9.919191	10.080809	10.113848	9.886152	18	12
49	15	9.805381	10.194619	9.919255	10.080745	10.113874	9.886126	45	11
50	30	9.805419	10.194581	9.919320	10.080680	10.113901	9.886099	30	10
51	45	9.805457	10.194543	9.919384	10.080616	10.113927	9.886073	15	9
52	43	9.805495	10.194505	9.919448	10.080552	10.113953	9.886047	17	8
53	15	9.805533	10.194467	9.919512	10.080488	10.113979	9.886021	45	7
54	30	9.805571	10.194429	9.919577	10.080423	10.114006	9.885994	30	6
55	45	9.805609	10.194391	9.919641	10.080359	10.114032	9.885968	15	5
56	44	9.805647	10.194353	9.919705	10.080295	10.114058	9.885942	16	4
57	15	9.805685	10.194315	9.919769	10.080231	10.114084	9.885916	45	3
58	30	9.805723	10.194277	9.919834	10.080166	10.114111	9.885889	30	2
59	45	9.805761	10.194239	9.919898	10.080102	10.114137	9.885863	15	1
60	45	9.805799	10.194201	9.919962	10.080038	10.114163	9.885837	15	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 21 ^m .		LOG. SINES, &c.						50 deg.	

2 ^h 39 ^m .		LOG. SINES, &c. (t.)						39 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"
0	45	9.805799	10.194201	9.919962	10.080038	10.114163	9.885837		15
1	15	9.805837	10.194163	9.920026	10.079974	10.114189	9.885811	45	
2	30	9.805875	10.194125	9.920091	10.079909	10.114216	9.885784	30	
3	45	9.805913	10.194087	9.920155	10.079845	10.114242	9.885758	15	
4	46	9.805951	10.194049	9.920219	10.079781	10.114268	9.885732		14
5	15	9.805989	10.194011	9.920283	10.079717	10.114294	9.885706	45	
6	30	9.806027	10.193973	9.920347	10.079653	10.114321	9.885679	30	
7	45	9.806065	10.193935	9.920412	10.079588	10.114347	9.885653	15	
8	47	9.806103	10.193897	9.920476	10.079524	10.114373	9.885627		13
9	15	9.806141	10.193859	9.920540	10.079460	10.114400	9.885600	45	
10	30	9.806179	10.193821	9.920604	10.079396	10.114426	9.885574	30	
11	45	9.806216	10.193784	9.920669	10.079331	10.114452	9.885548	15	
12	48	9.806254	10.193746	9.920733	10.079267	10.114479	9.885521		12
13	15	9.806292	10.193708	9.920797	10.079203	10.114505	9.885495	45	
14	30	9.806330	10.193670	9.920861	10.079139	10.114531	9.885469	30	
15	45	9.806368	10.193632	9.920925	10.079075	10.114557	9.885443	15	
16	49	9.806406	10.193594	9.920990	10.079010	10.114584	9.885416		11
17	15	9.806444	10.193556	9.921054	10.078946	10.114610	9.885390	45	
18	30	9.806482	10.193518	9.921118	10.078882	10.114636	9.885364	30	
19	45	9.806520	10.193480	9.921182	10.078818	10.114663	9.885337	15	
20	50	9.806557	10.193443	9.921247	10.078753	10.114689	9.885311		10
21	15	9.806595	10.193405	9.921311	10.078689	10.114716	9.885284	45	
22	30	9.806633	10.193367	9.921375	10.078625	10.114742	9.885258	30	
23	45	9.806671	10.193329	9.921439	10.078561	10.114768	9.885232	15	
24	51	9.806709	10.193291	9.921503	10.078497	10.114795	9.885205		9
25	15	9.806747	10.193253	9.921568	10.078432	10.114821	9.885179	45	
26	30	9.806785	10.193215	9.921632	10.078368	10.114847	9.885153	30	
27	45	9.806822	10.193178	9.921696	10.078304	10.114874	9.885126	15	
28	52	9.806860	10.193140	9.921760	10.078240	10.114900	9.885100		8
29	15	9.806898	10.193102	9.921824	10.078176	10.114926	9.885074	45	
30	30	9.806936	10.193064	9.921889	10.078111	10.114953	9.885047	30	
31	45	9.806974	10.193026	9.921953	10.078047	10.114979	9.885021	15	
32	53	9.807011	10.192989	9.922017	10.077983	10.115006	9.884994		7
33	15	9.807049	10.192951	9.922081	10.077919	10.115032	9.884968	45	
34	30	9.807087	10.192913	9.922145	10.077855	10.115058	9.884942	30	
35	45	9.807125	10.192875	9.922209	10.077791	10.115085	9.884915	15	
36	54	9.807163	10.192837	9.922274	10.077726	10.115111	9.884889		6
37	15	9.807200	10.192800	9.922338	10.077662	10.115138	9.884862	45	
38	30	9.807238	10.192762	9.922402	10.077598	10.115164	9.884836	30	
39	45	9.807274	10.192724	9.922466	10.077534	10.115190	9.884810	15	
40	55	9.807314	10.192686	9.922530	10.077470	10.115217	9.884783		5
41	15	9.807351	10.192649	9.922595	10.077405	10.115243	9.884757	45	
42	30	9.807389	10.192611	9.922659	10.077341	10.115270	9.884730	30	
43	45	9.807427	10.192573	9.922723	10.077277	10.115296	9.884704	15	
44	56	9.807465	10.192535	9.922787	10.077213	10.115323	9.884677		4
45	15	9.807502	10.192498	9.922851	10.077149	10.115349	9.884651	45	
46	30	9.807540	10.192460	9.922915	10.077085	10.115375	9.884625	30	
47	45	9.807578	10.192422	9.922980	10.077020	10.115402	9.884598	15	
48	57	9.807615	10.192385	9.923044	10.076956	10.115428	9.884572		3
49	15	9.807653	10.192347	9.923108	10.076892	10.115455	9.884545	45	
50	30	9.807691	10.192309	9.923172	10.076828	10.115481	9.884519	30	
51	45	9.807728	10.192272	9.923236	10.076764	10.115508	9.884492	15	
52	58	9.807766	10.192234	9.923300	10.076700	10.115534	9.884466		2
53	15	9.807804	10.192196	9.923364	10.076636	10.115561	9.884439	45	
54	30	9.807842	10.192158	9.923429	10.076571	10.115587	9.884413	30	
55	45	9.807879	10.192121	9.923493	10.076507	10.115614	9.884386	15	
56	59	9.807917	10.192083	9.923557	10.076443	10.115640	9.884360		1
57	15	9.807955	10.192045	9.923621	10.076379	10.115667	9.884333	45	
58	30	9.807992	10.192008	9.923685	10.076315	10.115693	9.884307	30	
59	45	9.808030	10.191970	9.923749	10.076251	10.115720	9.884280	15	
60	60	9.808067	10.191933	9.923813	10.076187	10.115746	9.884254		0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"
3 ^h 20 ^m .		LOG. SINES, &c.						50 deg.	

3° 40".		LOG. SINES, &c. (t.)					40 deg.	
"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	9.808067	10.191933	9.923813	10.076187	10.115746	9.884254	60	60
15	9.808106	10.191895	9.923878	10.076122	10.115773	9.884227	45	59
30	9.808143	10.191857	9.923942	10.076058	10.115799	9.884201	30	58
45	9.808180	10.191820	9.924006	10.075994	10.115826	9.884174	15	57
1	9.808218	10.191782	9.924070	10.075930	10.115852	9.884148	59	56
15	9.808256	10.191744	9.924134	10.075866	10.115879	9.884121	45	55
30	9.808293	10.191707	9.924198	10.075802	10.115905	9.884095	30	54
45	9.808331	10.191669	9.924262	10.075738	10.115932	9.884068	15	53
2	9.808368	10.191632	9.924327	10.075673	10.115958	9.884042	58	52
15	9.808406	10.191594	9.924391	10.075609	10.115985	9.884015	45	51
30	9.808444	10.191556	9.924455	10.075545	10.116011	9.883989	30	50
45	9.808481	10.191519	9.924519	10.075481	10.116038	9.883962	15	49
3	9.808519	10.191481	9.924583	10.075417	10.116064	9.883936	57	48
15	9.808556	10.191444	9.924647	10.075353	10.116091	9.883909	45	47
30	9.808594	10.191406	9.924711	10.075289	10.116117	9.883883	30	46
45	9.808631	10.191369	9.924775	10.075225	10.116144	9.883856	15	45
4	9.808669	10.191331	9.924840	10.075160	10.116171	9.883829	56	44
15	9.808707	10.191293	9.924904	10.075096	10.116197	9.883803	45	43
30	9.808744	10.191256	9.924968	10.075032	10.116224	9.883776	30	42
45	9.808782	10.191218	9.925032	10.074968	10.116250	9.883750	15	41
5	9.808819	10.191181	9.925096	10.074904	10.116277	9.883723	55	40
15	9.808857	10.191143	9.925160	10.074840	10.116303	9.883697	45	39
30	9.808894	10.191106	9.925224	10.074776	10.116330	9.883670	30	38
45	9.808932	10.191068	9.925288	10.074712	10.116357	9.883643	15	37
6	9.808969	10.191031	9.925352	10.074648	10.116383	9.883617	54	36
15	9.809007	10.190993	9.925416	10.074584	10.116410	9.883590	45	35
30	9.809044	10.190956	9.925481	10.074519	10.116436	9.883564	30	34
45	9.809082	10.190918	9.925545	10.074455	10.116463	9.883537	15	33
7	9.809119	10.190881	9.925609	10.074391	10.116490	9.883510	53	32
15	9.809157	10.190843	9.925673	10.074327	10.116516	9.883484	45	31
30	9.809194	10.190806	9.925737	10.074263	10.116543	9.883457	30	30
45	9.809232	10.190768	9.925801	10.074199	10.116570	9.883430	15	29
8	9.809269	10.190731	9.925865	10.074135	10.116596	9.883404	52	28
15	9.809307	10.190693	9.925929	10.074071	10.116623	9.883377	45	27
30	9.809344	10.190656	9.925993	10.074007	10.116649	9.883351	30	26
45	9.809381	10.190619	9.926057	10.073943	10.116676	9.883324	15	25
9	9.809419	10.190581	9.926121	10.073879	10.116703	9.883297	51	24
15	9.809456	10.190544	9.926186	10.073814	10.116729	9.883271	45	23
30	9.809494	10.190506	9.926250	10.073750	10.116756	9.883244	30	22
45	9.809531	10.190469	9.926314	10.073686	10.116783	9.883217	15	21
10	9.809569	10.190431	9.926378	10.073622	10.116809	9.883191	50	20
15	9.809606	10.190394	9.926442	10.073558	10.116836	9.883164	45	19
30	9.809643	10.190357	9.926506	10.073494	10.116863	9.883137	30	18
45	9.809681	10.190319	9.926570	10.073430	10.116889	9.883111	15	17
11	9.809718	10.190282	9.926634	10.073366	10.116916	9.883084	49	16
15	9.809756	10.190244	9.926698	10.073302	10.116943	9.883057	45	15
30	9.809793	10.190207	9.926762	10.073238	10.116969	9.883031	30	14
45	9.809830	10.190170	9.926826	10.073174	10.116996	9.883004	15	13
12	9.809868	10.190132	9.926890	10.073110	10.117023	9.882977	48	12
15	9.809905	10.190095	9.926954	10.073046	10.117049	9.882951	45	11
30	9.809942	10.190058	9.927018	10.072982	10.117076	9.882924	30	10
45	9.809980	10.190020	9.927083	10.072917	10.117103	9.882897	15	9
13	9.810017	10.189983	9.927147	10.072853	10.117129	9.882871	47	8
15	9.810055	10.189945	9.927211	10.072789	10.117156	9.882844	45	7
30	9.810092	10.189908	9.927275	10.072725	10.117183	9.882817	30	6
45	9.810129	10.189871	9.927339	10.072661	10.117210	9.882790	15	5
14	9.810167	10.189833	9.927403	10.072597	10.117236	9.882764	46	4
15	9.810204	10.189796	9.927467	10.072533	10.117263	9.882737	45	3
30	9.810241	10.189759	9.927531	10.072469	10.117290	9.882710	30	2
45	9.810278	10.189722	9.927595	10.072405	10.117316	9.882684	15	1
15	9.810316	10.189684	9.927659	10.072341	10.117343	9.882657	45	0
"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3° 19'		LOG. SINES, &c.					49 deg.	

2 ^h 41 ^m .		LOG. SINES, &c. (L)						40 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	'
0	15	9.810316	10.189684	9.927659	10.072341	10.117343	9.882657		45
1	15	9.810353	10.189647	9.927723	10.072277	10.117370	9.882630		45
2	30	9.810390	10.189610	9.927787	10.072213	10.117397	9.882603		30
3	45	9.810428	10.189572	9.927851	10.072149	10.117423	9.882577		15
4	16	9.810465	10.189535	9.927915	10.072085	10.117450	9.882550		44
5	15	9.810502	10.189498	9.927979	10.072021	10.117477	9.882523		45
6	30	9.810540	10.189460	9.928043	10.071957	10.117504	9.882496		30
7	45	9.810577	10.189423	9.928107	10.071893	10.117530	9.882470		15
8	17	9.810614	10.189386	9.928171	10.071829	10.117557	9.882443		43
9	15	9.810651	10.189349	9.928235	10.071765	10.117584	9.882416		45
10	30	9.810689	10.189311	9.928299	10.071701	10.117611	9.882389		30
11	45	9.810726	10.189274	9.928363	10.071637	10.117638	9.882362		15
12	18	9.810763	10.189237	9.928427	10.071573	10.117664	9.882336		42
13	15	9.810800	10.189200	9.928491	10.071509	10.117691	9.882309		45
14	30	9.810838	10.189162	9.928555	10.071445	10.117718	9.882282		30
15	45	9.810875	10.189125	9.928619	10.071381	10.117745	9.882255		15
16	19	9.810912	10.189088	9.928683	10.071317	10.117772	9.882228		41
17	15	9.810949	10.189051	9.928747	10.071253	10.117798	9.882202		45
18	30	9.810986	10.189014	9.928812	10.071189	10.117825	9.882175		30
19	45	9.811024	10.188976	9.928876	10.071124	10.117852	9.882148		15
20	20	9.811061	10.188939	9.928940	10.071060	10.117879	9.882121		40
21	15	9.811098	10.188902	9.929004	10.070996	10.117906	9.882094		45
22	30	9.811135	10.188865	9.929068	10.070932	10.117933	9.882068		30
23	45	9.811172	10.188828	9.929132	10.070868	10.117959	9.882041		15
24	21	9.811210	10.188790	9.929196	10.070804	10.117986	9.882014		39
25	15	9.811247	10.188753	9.929260	10.070740	10.118013	9.881987		45
26	30	9.811284	10.188716	9.929324	10.070676	10.118040	9.881960		30
27	45	9.811321	10.188679	9.929388	10.070612	10.118067	9.881933		15
28	22	9.811358	10.188642	9.929452	10.070548	10.118093	9.881907		38
29	15	9.811395	10.188605	9.929516	10.070484	10.118120	9.881880		45
30	30	9.811433	10.188567	9.929580	10.070420	10.118147	9.881853		30
31	45	9.811470	10.188530	9.929644	10.070356	10.118174	9.881826		15
32	23	9.811507	10.188493	9.929708	10.070292	10.118201	9.881799		37
33	15	9.811544	10.188456	9.929772	10.070228	10.118228	9.881772		45
34	30	9.811581	10.188419	9.929836	10.070164	10.118255	9.881745		30
35	45	9.811618	10.188382	9.929900	10.070100	10.118281	9.881719		15
36	24	9.811655	10.188345	9.929964	10.070036	10.118308	9.881692		36
37	15	9.811692	10.188308	9.930028	10.069972	10.118335	9.881665		45
38	30	9.811730	10.188270	9.930092	10.069908	10.118362	9.881638		30
39	45	9.811767	10.188233	9.930156	10.069844	10.118389	9.881611		15
40	25	9.811804	10.188196	9.930219	10.069781	10.118416	9.881584		35
41	15	9.811841	10.188159	9.930283	10.069717	10.118443	9.881557		45
42	30	9.811878	10.188122	9.930347	10.069653	10.118470	9.881530		30
43	45	9.811915	10.188085	9.930411	10.069589	10.118497	9.881503		15
44	26	9.811952	10.188048	9.930475	10.069525	10.118523	9.881477		34
45	15	9.811989	10.188011	9.930539	10.069461	10.118550	9.881450		45
46	30	9.812026	10.187974	9.930603	10.069397	10.118577	9.881423		30
47	45	9.812063	10.187937	9.930667	10.069333	10.118604	9.881396		15
48	27	9.812100	10.187900	9.930731	10.069269	10.118631	9.881369		33
49	15	9.812137	10.187863	9.930795	10.069205	10.118658	9.881342		45
50	30	9.812174	10.187826	9.930859	10.069141	10.118685	9.881315		30
51	45	9.812211	10.187789	9.930923	10.069077	10.118712	9.881288		15
52	28	9.812248	10.187752	9.930987	10.069013	10.118739	9.881261		32
53	15	9.812285	10.187715	9.931051	10.068949	10.118766	9.881234		45
54	30	9.812322	10.187678	9.931115	10.068885	10.118793	9.881207		30
55	45	9.812359	10.187641	9.931179	10.068821	10.118820	9.881180		15
56	29	9.812396	10.187604	9.931243	10.068757	10.118847	9.881153		31
57	15	9.812433	10.187567	9.931307	10.068693	10.118874	9.881126		45
58	30	9.812470	10.187530	9.931371	10.068629	10.118901	9.881099		30
59	45	9.812507	10.187493	9.931435	10.068565	10.118928	9.881072		15
60	30	9.812544	10.187456	9.931499	10.068501	10.118955	9.881045		30
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	'
3 ^h 18 ^m .		LOG. SINES, &c.						49 deg.	

2 ^h 42 ^m .		LOG. SINES, &c. (t.)						40 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	30	9.812544	10.187456	9.931499	10.068501	10.118955	9.881045	30	00
1	15	9.812581	10.187419	9.931563	10.068437	10.118982	9.881018	45	59
2	30	9.812618	10.187382	9.931627	10.068373	10.119008	9.880992	30	58
3	45	9.812655	10.187345	9.931691	10.068309	10.119035	9.880965	15	57
4	31	9.812692	10.187308	9.931755	10.068245	10.119062	9.880938	29	56
5	15	9.812729	10.187271	9.931819	10.068181	10.119089	9.880911	45	55
6	30	9.812766	10.187234	9.931883	10.068117	10.119116	9.880884	30	54
7	45	9.812803	10.187197	9.931946	10.068054	10.119143	9.880857	15	53
8	32	9.812840	10.187160	9.932010	10.067990	10.119170	9.880830	28	52
9	15	9.812877	10.187123	9.932074	10.067926	10.119197	9.880803	45	51
10	30	9.812914	10.187086	9.932138	10.067862	10.119224	9.880776	30	50
11	45	9.812951	10.187049	9.932202	10.067798	10.119251	9.880749	15	49
12	33	9.812988	10.187012	9.932266	10.067734	10.119279	9.880721	27	48
13	15	9.813025	10.186975	9.932330	10.067670	10.119306	9.880694	45	47
14	30	9.813062	10.186938	9.932394	10.067606	10.119333	9.880667	30	46
15	45	9.813098	10.186902	9.932458	10.067542	10.119360	9.880640	15	45
16	34	9.813135	10.186865	9.932522	10.067478	10.119387	9.880613	26	44
17	15	9.813172	10.186828	9.932586	10.067414	10.119414	9.880586	45	43
18	30	9.813209	10.186791	9.932650	10.067350	10.119441	9.880559	30	42
19	45	9.813246	10.186754	9.932714	10.067286	10.119468	9.880532	15	41
20	35	9.813283	10.186717	9.932778	10.067222	10.119495	9.880505	25	40
21	15	9.813320	10.186680	9.932842	10.067158	10.119522	9.880478	45	39
22	30	9.813357	10.186643	9.932905	10.067095	10.119549	9.880451	30	38
23	45	9.813393	10.186607	9.932969	10.067031	10.119576	9.880424	15	37
24	36	9.813430	10.186570	9.933033	10.066967	10.119603	9.880397	24	36
25	15	9.813467	10.186533	9.933097	10.066903	10.119630	9.880370	45	35
26	30	9.813504	10.186496	9.933161	10.066839	10.119657	9.880343	30	34
27	45	9.813541	10.186459	9.933225	10.066775	10.119684	9.880316	15	33
28	37	9.813578	10.186422	9.933289	10.066711	10.119711	9.880289	23	32
29	15	9.813614	10.186386	9.933353	10.066647	10.119738	9.880262	45	31
30	30	9.813651	10.186349	9.933417	10.066583	10.119766	9.880234	30	30
31	45	9.813688	10.186312	9.933481	10.066519	10.119793	9.880207	15	29
32	38	9.813725	10.186275	9.933545	10.066455	10.119820	9.880180	22	28
33	15	9.813762	10.186238	9.933609	10.066391	10.119847	9.880153	45	27
34	30	9.813799	10.186201	9.933672	10.066328	10.119874	9.880126	30	26
35	45	9.813835	10.186165	9.933736	10.066264	10.119901	9.880099	15	25
36	39	9.813872	10.186128	9.933800	10.066200	10.119928	9.880072	21	24
37	15	9.813909	10.186091	9.933864	10.066136	10.119955	9.880045	45	23
38	30	9.813946	10.186054	9.933928	10.066072	10.119982	9.880018	30	22
39	45	9.813982	10.186018	9.933992	10.066008	10.120010	9.879990	15	21
40	40	9.814019	10.185981	9.934056	10.065944	10.120037	9.879963	20	20
41	15	9.814056	10.185944	9.934120	10.065880	10.120064	9.879936	45	19
42	30	9.814093	10.185907	9.934184	10.065816	10.120091	9.879909	30	18
43	45	9.814129	10.185871	9.934247	10.065753	10.120118	9.879882	15	17
44	41	9.814166	10.185834	9.934311	10.065689	10.120145	9.879855	19	16
45	15	9.814203	10.185797	9.934375	10.065625	10.120172	9.879828	45	15
46	30	9.814240	10.185760	9.934439	10.065561	10.120200	9.879800	30	14
47	45	9.814276	10.185724	9.934503	10.065497	10.120227	9.879773	15	13
48	42	9.814313	10.185687	9.934567	10.065433	10.120254	9.879746	18	12
49	15	9.814350	10.185650	9.934631	10.065369	10.120281	9.879719	45	11
50	30	9.814387	10.185613	9.934695	10.065305	10.120308	9.879692	30	10
51	45	9.814423	10.185577	9.934759	10.065241	10.120335	9.879665	15	9
52	43	9.814460	10.185540	9.934822	10.065178	10.120363	9.879637	17	8
53	15	9.814497	10.185503	9.934886	10.065114	10.120390	9.879610	45	7
54	30	9.814533	10.185467	9.934950	10.065050	10.120417	9.879583	30	6
55	45	9.814570	10.185430	9.935014	10.064986	10.120444	9.879556	15	5
56	44	9.814607	10.185393	9.935078	10.064922	10.120471	9.879529	16	4
57	15	9.814643	10.185357	9.935142	10.064858	10.120499	9.879501	45	3
58	30	9.814680	10.185320	9.935206	10.064794	10.120526	9.879474	30	2
59	45	9.814717	10.185283	9.935270	10.064730	10.120553	9.879447	15	1
60	45	9.814753	10.185247	9.935333	10.064667	10.120580	9.879420	15	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 17 ^m .		LOG. SINES, &c.						49 deg.	

2 ^h 43 ^m .			LOG. SINES, &c. (t.)				40 deg		
sec.	"	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"
0	45		9.814753	10.185247	9.935333	10.064667	10.120580	9.879420	15
1		15	9.814790	10.185210	9.935397	10.064603	10.120607	9.879393	45
2		30	9.814827	10.185173	9.935461	10.064539	10.120635	9.879365	30
3		45	9.814863	10.185137	9.935525	10.064475	10.120662	9.879338	15
4	46		9.814900	10.185100	9.935589	10.064411	10.120689	9.879311	14
5		15	9.814937	10.185063	9.935653	10.064347	10.120716	9.879284	45
6		30	9.814973	10.185027	9.935717	10.064283	10.120744	9.879256	30
7		45	9.815010	10.184990	9.935780	10.064220	10.120771	9.879229	15
8	47		9.815046	10.184954	9.935844	10.064156	10.120798	9.879202	13
9		15	9.815083	10.184917	9.935908	10.064092	10.120825	9.879175	45
10		30	9.815120	10.184880	9.935972	10.064028	10.120852	9.879148	30
11		45	9.815156	10.184844	9.936036	10.063964	10.120880	9.879120	15
12	48		9.815193	10.184807	9.936100	10.063900	10.120907	9.879093	12
13		15	9.815229	10.184771	9.936164	10.063836	10.120934	9.879066	45
14		30	9.815266	10.184734	9.936227	10.063773	10.120962	9.879038	30
15		45	9.815303	10.184697	9.936291	10.063709	10.120989	9.879011	15
16	49		9.815339	10.184661	9.936355	10.063645	10.121016	9.878984	11
17		15	9.815376	10.184624	9.936419	10.063581	10.121043	9.878957	45
18		30	9.815412	10.184588	9.936483	10.063517	10.121071	9.878929	30
19		45	9.815449	10.184551	9.936547	10.063453	10.121098	9.878902	15
20	50		9.815485	10.184515	9.936610	10.063390	10.121125	9.878875	10
21		15	9.815522	10.184478	9.936674	10.063326	10.121153	9.878847	45
22		30	9.815558	10.184442	9.936738	10.063262	10.121180	9.878820	30
23		45	9.815595	10.184405	9.936802	10.063198	10.121207	9.878793	15
24	51		9.815631	10.184369	9.936866	10.063134	10.121234	9.878766	9
25		15	9.815668	10.184332	9.936930	10.063070	10.121262	9.878738	45
26		30	9.815704	10.184296	9.936994	10.063006	10.121289	9.878711	30
27		45	9.815741	10.184259	9.937057	10.062943	10.121316	9.878684	15
28	52		9.815778	10.184222	9.937121	10.062879	10.121344	9.878656	8
29		15	9.815814	10.184186	9.937185	10.062815	10.121371	9.878629	45
30		30	9.815851	10.184149	9.937249	10.062751	10.121398	9.878602	30
31		45	9.815887	10.184113	9.937313	10.062687	10.121426	9.878574	15
32	53		9.815923	10.184077	9.937376	10.062624	10.121453	9.878547	7
33		15	9.815960	10.184040	9.937440	10.062560	10.121480	9.878520	45
34		30	9.815996	10.184004	9.937504	10.062496	10.121508	9.878492	30
35		45	9.816033	10.183967	9.937568	10.062432	10.121535	9.878465	15
36	54		9.816069	10.183931	9.937632	10.062368	10.121562	9.878438	6
37		15	9.816106	10.183894	9.937696	10.062304	10.121590	9.878410	45
38		30	9.816142	10.183858	9.937759	10.062241	10.121617	9.878383	30
39		45	9.816179	10.183821	9.937823	10.062177	10.121645	9.878355	15
40	55		9.816215	10.183785	9.937887	10.062113	10.121672	9.878328	5
41		15	9.816252	10.183748	9.937951	10.062049	10.121699	9.878301	45
42		30	9.816288	10.183712	9.938015	10.061985	10.121727	9.878273	30
43		45	9.816324	10.183676	9.938078	10.061922	10.121754	9.878246	15
44	56		9.816361	10.183639	9.938142	10.061858	10.121781	9.878219	4
45		15	9.816397	10.183603	9.938206	10.061794	10.121809	9.878191	45
46		30	9.816434	10.183566	9.938270	10.061730	10.121836	9.878164	30
47		45	9.816470	10.183530	9.938334	10.061666	10.121864	9.878136	15
48	57		9.816507	10.183493	9.938397	10.061603	10.121891	9.878109	3
49		15	9.816543	10.183457	9.938461	10.061539	10.121918	9.878082	45
50		30	9.816579	10.183421	9.938525	10.061475	10.121946	9.878054	30
51		45	9.816616	10.183384	9.938589	10.061411	10.121973	9.878027	15
52	58		9.816652	10.183348	9.938653	10.061347	10.122001	9.877999	2
53		15	9.816688	10.183312	9.938716	10.061284	10.122028	9.877972	45
54		30	9.816725	10.183275	9.938780	10.061220	10.122056	9.877944	30
55		45	9.816761	10.183239	9.938844	10.061156	10.122083	9.877917	15
56	59		9.816797	10.183203	9.938908	10.061092	10.122110	9.877890	1
57		15	9.816834	10.183166	9.938972	10.061028	10.122138	9.877862	45
58		30	9.816870	10.183130	9.939035	10.060965	10.122165	9.877835	30
59		45	9.816907	10.183093	9.939099	10.060901	10.122193	9.877807	15
60	60		9.816943	10.183057	9.939163	10.060837	10.122220	9.877780	0
sec.	"	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"
3 ^h 16 ^m .			LOG. SINES, &c.				49 deg.		

2 ^h 44 ^m		LOG. SINES, &c. (t.)						41 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.816943	10.183057	9.939163	10.060837	10.122220	9.877780	60	60
1	15	9.816979	10.183021	9.939227	10.060773	10.122248	9.877752	45	59
2	30	9.817016	10.182984	9.939291	10.060709	10.122275	9.877723	30	58
3	45	9.817052	10.182948	9.939354	10.060646	10.122303	9.877697	15	57
4	1	9.817088	10.182912	9.939418	10.060582	10.122330	9.877670	59	56
5	15	9.817124	10.182876	9.939482	10.060518	10.122358	9.877642	45	55
6	30	9.817161	10.182839	9.939546	10.060454	10.122385	9.877615	30	54
7	45	9.817197	10.182803	9.939609	10.060391	10.122412	9.877588	15	53
8	2	9.817233	10.182767	9.939673	10.060327	10.122440	9.877560	58	52
9	15	9.817270	10.182730	9.939737	10.060263	10.122467	9.877533	45	51
10	30	9.817306	10.182694	9.939801	10.060199	10.122495	9.877505	30	50
11	45	9.817342	10.182658	9.939865	10.060135	10.122522	9.877478	15	49
12	3	9.817378	10.182622	9.939928	10.060072	10.122550	9.877450	57	48
13	15	9.817415	10.182585	9.939992	10.060008	10.122577	9.877423	45	47
14	30	9.817451	10.182549	9.940056	10.059944	10.122605	9.877395	30	46
15	45	9.817487	10.182513	9.940120	10.059880	10.122632	9.877368	15	45
16	4	9.817523	10.182477	9.940183	10.059817	10.122660	9.877340	56	44
17	15	9.817560	10.182440	9.940247	10.059753	10.122687	9.877313	45	43
18	30	9.817596	10.182404	9.940311	10.059689	10.122715	9.877285	30	42
19	45	9.817632	10.182368	9.940375	10.059625	10.122743	9.877257	15	41
20	5	9.817668	10.182332	9.940438	10.059562	10.122770	9.877230	55	40
21	15	9.817705	10.182295	9.940502	10.059498	10.122798	9.877202	45	39
22	30	9.817741	10.182259	9.940566	10.059434	10.122825	9.877175	30	38
23	45	9.817777	10.182223	9.940630	10.059370	10.122853	9.877147	15	37
24	6	9.817813	10.182187	9.940694	10.059306	10.122880	9.877120	54	36
25	15	9.817849	10.182151	9.940757	10.059243	10.122908	9.877092	45	35
26	30	9.817886	10.182114	9.940821	10.059179	10.122935	9.877065	30	34
27	45	9.817922	10.182078	9.940885	10.059115	10.122963	9.877037	15	33
28	7	9.817958	10.182042	9.940949	10.059051	10.122990	9.877010	53	32
29	15	9.817994	10.182006	9.941012	10.058988	10.123018	9.876982	45	31
30	30	9.818030	10.181970	9.941076	10.058924	10.123046	9.876954	30	30
31	45	9.818067	10.181933	9.941140	10.058860	10.123073	9.876927	15	29
32	8	9.818103	10.181897	9.941204	10.058796	10.123101	9.876899	52	28
33	15	9.818139	10.181861	9.941267	10.058733	10.123128	9.876872	45	27
34	30	9.818175	10.181825	9.941331	10.058669	10.123156	9.876844	30	26
35	45	9.818211	10.181789	9.941395	10.058605	10.123184	9.876816	15	25
36	9	9.818247	10.181753	9.941458	10.058542	10.123211	9.876789	51	24
37	15	9.818283	10.181717	9.941522	10.058478	10.123239	9.876761	45	23
38	30	9.818320	10.181680	9.941586	10.058414	10.123266	9.876734	30	22
39	45	9.818356	10.181644	9.941650	10.058350	10.123294	9.876706	15	21
40	10	9.818392	10.181608	9.941713	10.058287	10.123322	9.876678	50	20
41	15	9.818428	10.181572	9.941777	10.058223	10.123349	9.876651	45	19
42	30	9.818464	10.181536	9.941841	10.058159	10.123377	9.876623	30	18
43	45	9.818500	10.181500	9.941905	10.058095	10.123404	9.876596	15	17
44	11	9.818536	10.181464	9.941968	10.058032	10.123432	9.876568	49	16
45	15	9.818572	10.181428	9.942032	10.057968	10.123460	9.876540	45	15
46	30	9.818609	10.181391	9.942096	10.057904	10.123487	9.876513	30	14
47	45	9.818645	10.181355	9.942160	10.057840	10.123515	9.876485	15	13
48	12	9.818681	10.181319	9.942223	10.057777	10.123543	9.876457	48	12
49	15	9.818717	10.181283	9.942287	10.057713	10.123570	9.876430	45	11
50	30	9.818753	10.181247	9.942351	10.057649	10.123598	9.876402	30	10
51	45	9.818789	10.181211	9.942414	10.057586	10.123626	9.876374	15	9
52	13	9.818825	10.181175	9.942478	10.057522	10.123653	9.876347	47	8
53	15	9.818861	10.181139	9.942542	10.057458	10.123681	9.876319	45	7
54	30	9.818897	10.181103	9.942606	10.057394	10.123709	9.876291	30	6
55	45	9.818933	10.181067	9.942669	10.057331	10.123736	9.876264	15	5
56	14	9.818969	10.181031	9.942733	10.057267	10.123764	9.876236	46	4
57	15	9.819005	10.180995	9.942797	10.057203	10.123792	9.876208	45	3
58	30	9.819041	10.180959	9.942860	10.057140	10.123819	9.876181	30	2
59	45	9.819077	10.180923	9.942924	10.057076	10.123847	9.876153	15	1
60	15	9.819113	10.180887	9.942988	10.057012	10.123875	9.876125	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 15 ^m		LOG. SINES, &c.						48 deg.	

2 ^h 45 ^m .		LOG. SINES, &c. (L)						41 deg.		
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"	sec.
0	15	9.819113	10.180887	9.942988	10.057012	10.123875	9.876125	45		60
1	15	9.819149	10.180851	9.943052	10.056948	10.123902	9.876098	45		59
2	30	9.819185	10.180815	9.943115	10.056885	10.123930	9.876070	30		58
3	45	9.819221	10.180779	9.943179	10.056821	10.123958	9.876042	15		57
4	16	9.819257	10.180743	9.943243	10.056757	10.123986	9.876014	44		56
5	15	9.819293	10.180707	9.943306	10.056694	10.124013	9.875987	45		55
6	30	9.819329	10.180671	9.943370	10.056630	10.124041	9.875959	30		54
7	45	9.819365	10.180635	9.943434	10.056566	10.124069	9.875931	15		53
8	17	9.819401	10.180599	9.943498	10.056502	10.124096	9.875904	43		52
9	15	9.819437	10.180563	9.943561	10.056439	10.124124	9.875876	45		51
10	30	9.819473	10.180527	9.943625	10.056375	10.124152	9.875848	30		50
11	45	9.819509	10.180491	9.943689	10.056311	10.124180	9.875820	15		49
12	18	9.819545	10.180455	9.943752	10.056248	10.124207	9.875793	42		48
13	15	9.819581	10.180419	9.943816	10.056184	10.124235	9.875765	45		47
14	30	9.819617	10.180383	9.943880	10.056120	10.124263	9.875737	30		46
15	45	9.819653	10.180347	9.943943	10.056057	10.124291	9.875709	15		45
16	19	9.819689	10.180311	9.944007	10.055993	10.124318	9.875682	41		44
17	15	9.819725	10.180275	9.944071	10.055929	10.124346	9.875654	45		43
18	30	9.819761	10.180239	9.944134	10.055866	10.124374	9.875626	30		42
19	45	9.819797	10.180203	9.944198	10.055802	10.124402	9.875598	15		41
20	20	9.819832	10.180168	9.944262	10.055738	10.124429	9.875571	40		40
21	15	9.819868	10.180132	9.944326	10.055674	10.124457	9.875543	45		39
22	30	9.819904	10.180096	9.944389	10.055611	10.124485	9.875515	30		38
23	45	9.819940	10.180060	9.944453	10.055547	10.124513	9.875487	15		37
24	21	9.819976	10.180024	9.944517	10.055483	10.124541	9.875459	39		36
25	15	9.820012	10.179988	9.944580	10.055420	10.124568	9.875432	45		35
26	30	9.820048	10.179952	9.944644	10.055356	10.124596	9.875404	30		34
27	45	9.820084	10.179916	9.944708	10.055292	10.124624	9.875376	15		33
28	22	9.820120	10.179880	9.944771	10.055229	10.124652	9.875348	38		32
29	15	9.820155	10.179845	9.944835	10.055165	10.124680	9.875320	45		31
30	30	9.820191	10.179809	9.944899	10.055101	10.124707	9.875293	30		30
31	45	9.820227	10.179773	9.944962	10.055038	10.124735	9.875265	15		29
32	23	9.820263	10.179737	9.945026	10.054974	10.124763	9.875237	37		28
33	15	9.820299	10.179701	9.945090	10.054910	10.124791	9.875209	45		27
34	30	9.820335	10.179665	9.945153	10.054847	10.124819	9.875181	30		26
35	45	9.820370	10.179630	9.945217	10.054783	10.124847	9.875153	15		25
36	24	9.820406	10.179594	9.945281	10.054719	10.124874	9.875126	36		24
37	15	9.820442	10.179558	9.945344	10.054656	10.124902	9.875098	45		23
38	30	9.820478	10.179522	9.945408	10.054592	10.124930	9.875070	30		22
39	45	9.820514	10.179486	9.945472	10.054528	10.124958	9.875042	15		21
40	25	9.820550	10.179450	9.945535	10.054465	10.124986	9.875014	35		20
41	15	9.820585	10.179415	9.945599	10.054401	10.125014	9.874986	45		19
42	30	9.820621	10.179379	9.945663	10.054337	10.125042	9.874958	30		18
43	45	9.820657	10.179343	9.945726	10.054274	10.125069	9.874931	15		17
44	26	9.820693	10.179307	9.945790	10.054210	10.125097	9.874903	34		16
45	15	9.820728	10.179272	9.945854	10.054146	10.125125	9.874875	45		15
46	30	9.820764	10.179236	9.945917	10.054083	10.125153	9.874847	30		14
47	45	9.820800	10.179200	9.945981	10.054019	10.125181	9.874819	15		13
48	27	9.820836	10.179164	9.946045	10.053955	10.125209	9.874791	33		12
49	15	9.820872	10.179128	9.946108	10.053892	10.125237	9.874763	45		11
50	30	9.820907	10.179093	9.946172	10.053828	10.125265	9.874735	30		10
51	45	9.820943	10.179057	9.946236	10.053764	10.125293	9.874707	15		9
52	28	9.820979	10.179021	9.946299	10.053701	10.125321	9.874679	32		8
53	15	9.821015	10.178985	9.946363	10.053637	10.125348	9.874652	45		7
54	30	9.821050	10.178950	9.946427	10.053573	10.125376	9.874624	30		6
55	45	9.821086	10.178914	9.946490	10.053510	10.125404	9.874596	15		5
56	29	9.821122	10.178878	9.946554	10.053446	10.125432	9.874568	31		4
57	15	9.821157	10.178843	9.946617	10.053383	10.125460	9.874540	45		3
58	30	9.821193	10.178807	9.946681	10.053319	10.125488	9.874512	30		2
59	45	9.821229	10.178771	9.946745	10.053255	10.125516	9.874484	15		1
60	30	9.821265	10.178735	9.946808	10.053192	10.125544	9.874456	30		0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine	"	"	sec.
3 ^h 14 ^m .		LOG. SINES, &c.						48 deg.		

2 ^d 46 ^m .			LOG. SINES, &c. (t.)					41 deg.			
sec.	°	'	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	°	'	sec.
0	30		9.821265	10.178735	9.946808	10.053192	10.125544	9.874456	30		60
1		15	9.821300	10.178700	9.946872	10.053128	10.125572	9.874428	45		59
2		30	9.821336	10.178664	9.946936	10.053064	10.125600	9.874400	30		58
3		45	9.821372	10.178628	9.946999	10.053001	10.125628	9.874372	15		57
4	31		9.821407	10.178593	9.947063	10.052937	10.125656	9.874344	29		56
5		15	9.821443	10.178557	9.947127	10.052873	10.125684	9.874316	45		55
6		30	9.821479	10.178521	9.947190	10.052810	10.125712	9.874288	30		54
7		45	9.821514	10.178486	9.947254	10.052746	10.125740	9.874260	15		53
8	32		9.821550	10.178450	9.947317	10.052683	10.125768	9.874232	28		52
9		15	9.821586	10.178414	9.947381	10.052619	10.125796	9.874204	45		51
10		30	9.821621	10.178379	9.947445	10.052555	10.125824	9.874176	30		50
11		45	9.821657	10.178343	9.947508	10.052492	10.125852	9.874148	15		49
12	33		9.821693	10.178307	9.947572	10.052428	10.125880	9.874120	27		48
13		15	9.821728	10.178272	9.947636	10.052364	10.125908	9.874092	45		47
14		30	9.821764	10.178236	9.947699	10.052301	10.125935	9.874065	30		46
15		45	9.821799	10.178201	9.947763	10.052237	10.125963	9.874037	15		45
16	34		9.821835	10.178165	9.947826	10.052174	10.125992	9.874008	26		44
17		15	9.821871	10.178129	9.947890	10.052110	10.126020	9.873980	45		43
18		30	9.821906	10.178094	9.947954	10.052046	10.126048	9.873952	30		42
19		45	9.821942	10.178058	9.948017	10.051983	10.126076	9.873924	15		41
20	35		9.821977	10.178023	9.948081	10.051919	10.126104	9.873896	25		40
21		15	9.822013	10.177987	9.948145	10.051855	10.126132	9.873868	45		39
22		30	9.822049	10.177951	9.948208	10.051792	10.126160	9.873840	30		38
23		45	9.822084	10.177916	9.948272	10.051728	10.126188	9.873812	15		37
24	36		9.822120	10.177880	9.948335	10.051665	10.126216	9.873784	24		36
25		15	9.822155	10.177845	9.948399	10.051601	10.126244	9.873756	45		35
26		30	9.822191	10.177809	9.948463	10.051537	10.126272	9.873728	30		34
27		45	9.822226	10.177774	9.948526	10.051474	10.126300	9.873700	15		33
28	37		9.822262	10.177738	9.948590	10.051410	10.126328	9.873672	23		32
29		15	9.822298	10.177702	9.948653	10.051347	10.126356	9.873644	45		31
30		30	9.822333	10.177667	9.948717	10.051283	10.126384	9.873616	30		30
31		45	9.822369	10.177631	9.948781	10.051219	10.126412	9.873588	15		29
32	38		9.822404	10.177596	9.948844	10.051156	10.126440	9.873560	22		28
33		15	9.822440	10.177560	9.948908	10.051092	10.126468	9.873532	45		27
34		30	9.822475	10.177525	9.948971	10.051029	10.126496	9.873504	30		26
35		45	9.822511	10.177489	9.949035	10.050965	10.126524	9.873476	15		25
36	39		9.822546	10.177454	9.949099	10.050901	10.126552	9.873448	21		24
37		15	9.822582	10.177418	9.949162	10.050838	10.126581	9.873419	45		23
38		30	9.822617	10.177383	9.949226	10.050774	10.126609	9.873391	30		22
39		45	9.822653	10.177347	9.949289	10.050711	10.126637	9.873363	15		21
40	40		9.822688	10.177312	9.949353	10.050647	10.126665	9.873335	20		20
41		15	9.822724	10.177276	9.949417	10.050583	10.126693	9.873307	45		19
42		30	9.822759	10.177241	9.949480	10.050520	10.126721	9.873279	30		18
43		45	9.822795	10.177205	9.949544	10.050456	10.126749	9.873251	15		17
44	41		9.822830	10.177170	9.949607	10.050393	10.126777	9.873223	19		16
45		15	9.822866	10.177134	9.949671	10.050329	10.126805	9.873195	45		15
46		30	9.822901	10.177099	9.949735	10.050265	10.126834	9.873166	30		14
47		45	9.822937	10.177063	9.949798	10.050202	10.126862	9.873138	15		13
48	42		9.822972	10.177028	9.949862	10.050138	10.126890	9.873110	18		12
49		15	9.823007	10.176993	9.949925	10.050075	10.126918	9.873082	45		11
50		30	9.823043	10.176957	9.949989	10.050011	10.126946	9.873054	30		10
51		45	9.823078	10.176922	9.950053	10.049947	10.126974	9.873026	15		9
52	43		9.823114	10.176886	9.950116	10.049884	10.127002	9.872998	17		8
53		15	9.823149	10.176851	9.950180	10.049820	10.127031	9.872969	45		7
54		30	9.823185	10.176815	9.950243	10.049757	10.127059	9.872941	30		6
55		45	9.823220	10.176780	9.950307	10.049693	10.127087	9.872913	15		5
56	44		9.823255	10.176745	9.950370	10.049630	10.127115	9.872885	16		4
57		15	9.823291	10.176709	9.950434	10.049566	10.127143	9.872857	45		3
58		30	9.823326	10.176674	9.950498	10.049502	10.127171	9.872829	30		2
59		45	9.823362	10.176638	9.950561	10.049439	10.127200	9.872800	15		1
60	45		9.823397	10.176603	9.950625	10.049375	10.127228	9.872772	15		0
sec.	°	'	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	°	'	sec.
3 ^d 13 ^m .			LOG. SINES, &c.					48 deg.			

2 ^h 47 ^m .		LOG. SINES, &c. (L.)						41 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.823397	10.176603	9.950625	10.049375	10.127228	9.872772	15	60
1	15	9.823432	10.176568	9.950688	10.049312	10.127256	9.872744	45	59
2	30	9.823468	10.176532	9.950752	10.049248	10.127284	9.872716	30	58
3	45	9.823503	10.176497	9.950815	10.049185	10.127312	9.872688	15	57
4	46	9.823539	10.176461	9.950879	10.049121	10.127341	9.872659	14	56
5	15	9.823574	10.176426	9.950943	10.049057	10.127369	9.872631	45	55
6	30	9.823609	10.176391	9.951006	10.048994	10.127397	9.872603	30	54
7	45	9.823645	10.176355	9.951070	10.048930	10.127425	9.872575	15	53
8	47	9.823680	10.176320	9.951133	10.048867	10.127453	9.872547	13	52
9	15	9.823715	10.176285	9.951197	10.048803	10.127482	9.872518	45	51
10	30	9.823751	10.176249	9.951260	10.048740	10.127510	9.872490	30	50
11	45	9.823786	10.176214	9.951324	10.048676	10.127538	9.872462	15	49
12	48	9.823821	10.176179	9.951388	10.048612	10.127566	9.872434	12	48
13	15	9.823857	10.176143	9.951451	10.048549	10.127595	9.872405	45	47
14	30	9.823892	10.176108	9.951515	10.048485	10.127623	9.872377	30	46
15	45	9.823927	10.176073	9.951578	10.048422	10.127651	9.872349	15	45
16	49	9.823963	10.176037	9.951642	10.048358	10.127679	9.872321	11	44
17	15	9.823998	10.176002	9.951705	10.048295	10.127708	9.872292	45	43
18	30	9.824033	10.175967	9.951769	10.048231	10.127736	9.872264	30	42
19	45	9.824068	10.175932	9.951833	10.048167	10.127764	9.872236	15	41
20	50	9.824104	10.175896	9.951896	10.048104	10.127792	9.872208	10	40
21	15	9.824139	10.175861	9.951960	10.048040	10.127821	9.872179	45	39
22	30	9.824174	10.175826	9.952023	10.047977	10.127849	9.872151	30	38
23	45	9.824210	10.175790	9.952087	10.047913	10.127877	9.872123	15	37
24	51	9.824245	10.175755	9.952150	10.047850	10.127906	9.872094	9	36
25	15	9.824280	10.175720	9.952214	10.047786	10.127934	9.872066	45	35
26	30	9.824315	10.175685	9.952277	10.047723	10.127962	9.872038	30	34
27	45	9.824351	10.175649	9.952341	10.047659	10.127990	9.872010	15	33
28	52	9.824386	10.175614	9.952404	10.047596	10.128019	9.871981	8	32
29	15	9.824421	10.175579	9.952468	10.047532	10.128047	9.871953	45	31
30	30	9.824456	10.175544	9.952532	10.047468	10.128075	9.871925	30	30
31	45	9.824491	10.175509	9.952595	10.047405	10.128104	9.871896	15	29
32	53	9.824527	10.175473	9.952659	10.047341	10.128132	9.871868	7	28
33	15	9.824562	10.175438	9.952722	10.047278	10.128160	9.871840	45	27
34	30	9.824597	10.175403	9.952786	10.047214	10.128189	9.871811	30	26
35	45	9.824632	10.175368	9.952849	10.047151	10.128217	9.871783	15	25
36	54	9.824668	10.175332	9.952913	10.047087	10.128245	9.871755	6	24
37	15	9.824703	10.175297	9.952976	10.047024	10.128274	9.871726	45	23
38	30	9.824738	10.175262	9.953040	10.046960	10.128302	9.871698	30	22
39	45	9.824773	10.175227	9.953103	10.046897	10.128330	9.871670	15	21
40	55	9.824808	10.175192	9.953167	10.046833	10.128359	9.871641	5	20
41	15	9.824843	10.175157	9.953230	10.046770	10.128387	9.871613	45	19
42	30	9.824879	10.175121	9.953294	10.046706	10.128415	9.871585	30	18
43	45	9.824914	10.175086	9.953358	10.046642	10.128444	9.871556	15	17
44	56	9.824949	10.175051	9.953421	10.046579	10.128472	9.871528	4	16
45	15	9.824984	10.175016	9.953485	10.046515	10.128501	9.871499	45	15
46	30	9.825019	10.174981	9.953548	10.046452	10.128529	9.871471	30	14
47	45	9.825054	10.174946	9.953612	10.046388	10.128557	9.871443	15	13
48	57	9.825090	10.174910	9.953675	10.046325	10.128586	9.871414	3	12
49	15	9.825125	10.174875	9.953739	10.046261	10.128614	9.871386	45	11
50	30	9.825160	10.174840	9.953802	10.046198	10.128642	9.871358	30	10
51	45	9.825195	10.174805	9.953866	10.046134	10.128671	9.871329	15	9
52	58	9.825230	10.174770	9.953929	10.046071	10.128699	9.871301	2	8
53	15	9.825265	10.174735	9.953993	10.046007	10.128728	9.871272	45	7
54	30	9.825300	10.174700	9.954056	10.045944	10.128756	9.871244	30	6
55	45	9.825335	10.174665	9.954120	10.045880	10.128784	9.871216	15	5
56	59	9.825370	10.174630	9.954183	10.045817	10.128813	9.871187	1	4
57	15	9.825406	10.174594	9.954247	10.045753	10.128841	9.871159	45	3
58	30	9.825441	10.174559	9.954310	10.045690	10.128870	9.871130	30	2
59	45	9.825476	10.174524	9.954374	10.045626	10.128898	9.871102	15	1
60	60	9.825511	10.174489	9.954437	10.045563	10.128927	9.871073	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 12 ^m .		LOG. SINES, &c.						48 deg.	

2 nd 48 ^m .		LOG. SINES, &c. (L.)						42 deg.	
sec.	°	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	°	sec.
0	0	9.825511	10.174489	9.954437	10.045563	10.128927	9.871073	60	60
1	15	9.825546	10.174454	9.954501	10.045499	10.128955	9.871045	45	59
2	30	9.825581	10.174419	9.954564	10.045436	10.128983	9.871017	30	58
3	45	9.825616	10.174384	9.954628	10.045372	10.129012	9.870988	15	57
4	1	9.825651	10.174349	9.954691	10.045309	10.129040	9.870960	59	56
5	15	9.825686	10.174314	9.954755	10.045245	10.129069	9.870931	45	55
6	30	9.825721	10.174279	9.954818	10.045182	10.129097	9.870903	30	54
7	45	9.825756	10.174244	9.954882	10.045118	10.129126	9.870874	15	53
8	2	9.825791	10.174209	9.954945	10.045055	10.129154	9.870846	58	52
9	15	9.825826	10.174174	9.955009	10.044991	10.129183	9.870817	45	51
10	30	9.825861	10.174139	9.955072	10.044928	10.129211	9.870789	30	50
11	45	9.825896	10.174104	9.955136	10.044864	10.129240	9.870760	15	49
12	3	9.825931	10.174069	9.955199	10.044801	10.129268	9.870732	57	48
13	15	9.825966	10.174034	9.955263	10.044737	10.129297	9.870703	45	47
14	30	9.826001	10.173999	9.955326	10.044674	10.129325	9.870675	30	46
15	45	9.826036	10.173964	9.955390	10.044610	10.129354	9.870646	15	45
16	4	9.826071	10.173929	9.955453	10.044547	10.129382	9.870618	56	44
17	15	9.826106	10.173894	9.955517	10.044483	10.129411	9.870589	45	43
18	30	9.826141	10.173859	9.955580	10.044420	10.129439	9.870561	30	42
19	45	9.826176	10.173824	9.955644	10.044356	10.129468	9.870532	15	41
20	5	9.826211	10.173789	9.955707	10.044293	10.129496	9.870504	55	40
21	15	9.826246	10.173754	9.955771	10.044229	10.129525	9.870475	45	39
22	30	9.826281	10.173719	9.955834	10.044166	10.129553	9.870447	30	38
23	45	9.826316	10.173684	9.955898	10.044102	10.129582	9.870418	15	37
24	6	9.826351	10.173649	9.955961	10.044039	10.129610	9.870390	54	36
25	15	9.826386	10.173614	9.956025	10.043975	10.129639	9.870361	45	35
26	30	9.826421	10.173579	9.956088	10.043912	10.129667	9.870333	30	34
27	45	9.826456	10.173544	9.956152	10.043848	10.129696	9.870304	15	33
28	7	9.826491	10.173509	9.956215	10.043785	10.129724	9.870276	53	32
29	15	9.826526	10.173474	9.956279	10.043721	10.129753	9.870247	45	31
30	30	9.826561	10.173439	9.956342	10.043658	10.129782	9.870218	30	30
31	45	9.826596	10.173404	9.956406	10.043594	10.129810	9.870190	15	29
32	8	9.826631	10.173369	9.956469	10.043531	10.129839	9.870161	52	28
33	15	9.826666	10.173334	9.956533	10.043467	10.129867	9.870133	45	27
34	30	9.826700	10.173300	9.956596	10.043404	10.129896	9.870104	30	26
35	45	9.826735	10.173265	9.956660	10.043340	10.129924	9.870076	15	25
36	9	9.826770	10.173230	9.956723	10.043277	10.129953	9.870047	51	24
37	15	9.826805	10.173195	9.956787	10.043213	10.129982	9.870018	45	23
38	30	9.826840	10.173160	9.956850	10.043150	10.130010	9.869990	30	22
39	45	9.826875	10.173125	9.956914	10.043086	10.130039	9.869961	15	21
40	10	9.826910	10.173090	9.956977	10.043023	10.130067	9.869933	50	20
41	15	9.826945	10.173055	9.957041	10.042959	10.130096	9.869904	45	19
42	30	9.826980	10.173020	9.957104	10.042896	10.130125	9.869875	30	18
43	45	9.827014	10.172986	9.957168	10.042832	10.130153	9.869847	15	17
44	11	9.827049	10.172951	9.957231	10.042769	10.130182	9.869818	49	16
45	15	9.827084	10.172916	9.957295	10.042705	10.130210	9.869790	45	15
46	30	9.827119	10.172881	9.957358	10.042642	10.130239	9.869761	30	14
47	45	9.827154	10.172846	9.957421	10.042579	10.130268	9.869732	15	13
48	12	9.827189	10.172811	9.957485	10.042515	10.130296	9.869704	48	12
49	15	9.827223	10.172777	9.957548	10.042452	10.130325	9.869675	45	11
50	30	9.827258	10.172742	9.957612	10.042388	10.130354	9.869646	30	10
51	45	9.827293	10.172707	9.957675	10.042325	10.130382	9.869618	15	9
52	13	9.827328	10.172672	9.957739	10.042261	10.130411	9.869589	47	8
53	15	9.827363	10.172637	9.957802	10.042198	10.130440	9.869560	45	7
54	30	9.827398	10.172602	9.957866	10.042134	10.130468	9.869532	30	6
55	45	9.827432	10.172568	9.957929	10.042071	10.130497	9.869503	15	5
56	14	9.827467	10.172533	9.957993	10.042007	10.130526	9.869474	46	4
57	15	9.827502	10.172498	9.958056	10.041944	10.130554	9.869446	45	3
58	30	9.827537	10.172463	9.958120	10.041880	10.130583	9.869417	30	2
59	45	9.827571	10.172429	9.958183	10.041817	10.130612	9.869388	15	1
60	15	9.827606	10.172394	9.958246	10.041754	10.130640	9.869360	45	0
sec.	°	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	°	sec.
3 rd 11 ^m .		LOG. SINES, &c.						47 deg.	

2 ^h 49 ^m .		LOG. SINES, &c. (L.)						42 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	15	9.827606	10.172394	9.958246	10.041754	10.130640	9.869360	45	60
1	15	9.827641	10.172359	9.958310	10.041690	10.130669	9.869331	45	59
2	30	9.827676	10.172324	9.958373	10.041627	10.130698	9.869302	30	58
3	45	9.827711	10.172289	9.958437	10.041563	10.130726	9.869274	15	57
4	16	9.827745	10.172255	9.958500	10.041500	10.130755	9.869245	44	56
5	15	9.827780	10.172220	9.958564	10.041436	10.130784	9.869216	45	55
6	30	9.827815	10.172185	9.958627	10.041373	10.130813	9.869187	30	54
7	45	9.827849	10.172151	9.958691	10.041309	10.130841	9.869159	15	53
8	17	9.827884	10.172116	9.958754	10.041246	10.130870	9.869130	43	52
9	15	9.827919	10.172081	9.958818	10.041182	10.130899	9.869101	45	51
10	30	9.827954	10.172046	9.958881	10.041119	10.130927	9.869073	30	50
11	45	9.827988	10.172012	9.958944	10.041056	10.130956	9.869044	15	49
12	18	9.828023	10.171977	9.959008	10.040992	10.130985	9.869015	42	48
13	15	9.828058	10.171942	9.959071	10.040929	10.131014	9.868986	45	47
14	30	9.828092	10.171908	9.959135	10.040865	10.131042	9.868958	30	46
15	45	9.828127	10.171873	9.959198	10.040802	10.131071	9.868929	15	45
16	19	9.828162	10.171838	9.959262	10.040738	10.131100	9.868900	41	44
17	15	9.828197	10.171803	9.959325	10.040675	10.131129	9.868871	45	43
18	30	9.828231	10.171769	9.959389	10.040611	10.131157	9.868843	30	42
19	45	9.828266	10.171734	9.959452	10.040548	10.131186	9.868814	15	41
20	20	9.828301	10.171699	9.959515	10.040485	10.131215	9.868785	40	40
21	15	9.828335	10.171665	9.959579	10.040421	10.131244	9.868756	45	39
22	30	9.828370	10.171630	9.959642	10.040358	10.131272	9.868728	30	38
23	45	9.828405	10.171595	9.959706	10.040294	10.131301	9.868699	15	37
24	21	9.828439	10.171561	9.959769	10.040231	10.131330	9.868670	39	36
25	15	9.828474	10.171526	9.959833	10.040167	10.131359	9.868641	45	35
26	30	9.828509	10.171491	9.959896	10.040104	10.131388	9.868612	30	34
27	45	9.828543	10.171457	9.959960	10.040040	10.131416	9.868584	15	33
28	22	9.828578	10.171422	9.960023	10.039977	10.131445	9.868555	38	32
29	15	9.828612	10.171388	9.960086	10.039914	10.131474	9.868526	45	31
30	30	9.828647	10.171353	9.960150	10.039850	10.131503	9.868497	30	30
31	45	9.828682	10.171318	9.960213	10.039787	10.131532	9.868468	15	29
32	23	9.828716	10.171284	9.960277	10.039723	10.131560	9.868440	37	28
33	15	9.828751	10.171249	9.960340	10.039660	10.131589	9.868411	45	27
34	30	9.828785	10.171215	9.960404	10.039596	10.131618	9.868382	30	26
35	45	9.828820	10.171180	9.960467	10.039533	10.131647	9.868353	15	25
36	24	9.828855	10.171145	9.960530	10.039470	10.131676	9.868324	36	24
37	15	9.828889	10.171111	9.960594	10.039406	10.131705	9.868295	45	23
38	30	9.828924	10.171076	9.960657	10.039343	10.131734	9.868266	30	22
39	45	9.828958	10.171042	9.960721	10.039279	10.131762	9.868238	15	21
40	25	9.828993	10.171007	9.960784	10.039216	10.131791	9.868209	35	20
41	15	9.829028	10.170972	9.960848	10.039152	10.131820	9.868180	45	19
42	30	9.829062	10.170938	9.960911	10.039089	10.131849	9.868151	30	18
43	45	9.829097	10.170903	9.960974	10.039026	10.131878	9.868122	15	17
44	26	9.829131	10.170869	9.961038	10.038962	10.131907	9.868093	34	16
45	15	9.829166	10.170834	9.961101	10.038899	10.131936	9.868064	45	15
46	30	9.829200	10.170800	9.961165	10.038835	10.131964	9.868036	30	14
47	45	9.829235	10.170765	9.961228	10.038772	10.131993	9.868007	15	13
48	27	9.829269	10.170731	9.961291	10.038709	10.132022	9.867978	33	12
49	15	9.829304	10.170696	9.961355	10.038645	10.132051	9.867949	45	11
50	30	9.829338	10.170662	9.961418	10.038582	10.132080	9.867920	30	10
51	45	9.829373	10.170627	9.961482	10.038518	10.132109	9.867891	15	9
52	28	9.829407	10.170593	9.961545	10.038455	10.132138	9.867862	32	8
53	15	9.829442	10.170558	9.961609	10.038391	10.132167	9.867833	45	7
54	30	9.829476	10.170524	9.961672	10.038328	10.132196	9.867804	30	6
55	45	9.829511	10.170489	9.961735	10.038265	10.132225	9.867775	15	5
56	29	9.829545	10.170455	9.961799	10.038201	10.132253	9.867747	31	4
57	15	9.829580	10.170420	9.961862	10.038138	10.132282	9.867718	45	3
58	30	9.829614	10.170386	9.961926	10.038074	10.132311	9.867689	30	2
59	45	9.829649	10.170351	9.961989	10.038011	10.132340	9.867660	15	1
60	30	9.829683	10.170317	9.962052	10.037948	10.132369	9.867631	30	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 10 ^m .		LOG. SINES, &c.						47 deg.	

2 ^h 50 ^m .		LOG. SINES, &c. (t.)						42 deg.	
sec.	°	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	°	sec.
0	30	9.829683	10.170317	9.962052	10.037948	10.132369	9.867631	30	60
1	15	9.829718	10.170282	9.962116	10.037884	10.132398	9.867602	45	59
2	30	9.829752	10.170248	9.962179	10.037821	10.132427	9.867573	30	58
3	45	9.829787	10.170213	9.962243	10.037757	10.132456	9.867544	15	57
4	31	9.829821	10.170179	9.962306	10.037694	10.132485	9.867515	29	56
5	15	9.829856	10.170144	9.962369	10.037631	10.132514	9.867486	45	55
6	30	9.829890	10.170110	9.962433	10.037567	10.132543	9.867457	30	54
7	45	9.829924	10.170076	9.962496	10.037504	10.132572	9.867428	15	53
8	32	9.829959	10.170041	9.962560	10.037440	10.132601	9.867399	28	52
9	15	9.829993	10.170007	9.962623	10.037377	10.132630	9.867370	45	51
10	30	9.830028	10.169972	9.962686	10.037314	10.132659	9.867341	30	50
11	45	9.830062	10.169938	9.962750	10.037250	10.132688	9.867312	15	49
12	33	9.830097	10.169903	9.962813	10.037187	10.132717	9.867283	27	48
13	15	9.830131	10.169869	9.962877	10.037123	10.132746	9.867254	45	47
14	30	9.830165	10.169835	9.962940	10.037060	10.132775	9.867225	30	46
15	45	9.830200	10.169800	9.963003	10.036997	10.132804	9.867196	15	45
16	34	9.830234	10.169766	9.963067	10.036933	10.132833	9.867167	26	44
17	15	9.830269	10.169731	9.963130	10.036870	10.132862	9.867138	45	43
18	30	9.830303	10.169697	9.963194	10.036806	10.132891	9.867109	30	42
19	45	9.830337	10.169663	9.963257	10.036743	10.132920	9.867080	15	41
20	35	9.830372	10.169628	9.963320	10.036680	10.132949	9.867051	25	40
21	15	9.830406	10.169594	9.963384	10.036616	10.132978	9.867022	45	39
22	30	9.830440	10.169560	9.963447	10.036553	10.133007	9.866993	30	38
23	45	9.830475	10.169525	9.963511	10.036489	10.133036	9.866964	15	37
24	36	9.830509	10.169491	9.963574	10.036426	10.133065	9.866935	24	36
25	15	9.830543	10.169457	9.963637	10.036363	10.133094	9.866906	45	35
26	30	9.830578	10.169422	9.963701	10.036299	10.133123	9.866877	30	34
27	45	9.830612	10.169388	9.963764	10.036236	10.133152	9.866848	15	33
28	37	9.830646	10.169354	9.963827	10.036173	10.133181	9.866819	23	32
29	15	9.830681	10.169319	9.963891	10.036109	10.133210	9.866790	45	31
30	30	9.830715	10.169285	9.963954	10.036046	10.133239	9.866761	30	30
31	45	9.830749	10.169251	9.964018	10.035982	10.133268	9.866732	15	29
32	38	9.830784	10.169216	9.964081	10.035919	10.133297	9.866703	22	28
33	15	9.830818	10.169182	9.964144	10.035856	10.133326	9.866674	45	27
34	30	9.830852	10.169148	9.964208	10.035792	10.133356	9.866644	30	26
35	45	9.830887	10.169113	9.964271	10.035729	10.133385	9.866615	15	25
36	39	9.830921	10.169079	9.964335	10.035665	10.133414	9.866586	21	24
37	15	9.830955	10.169045	9.964398	10.035602	10.133443	9.866557	45	23
38	30	9.830989	10.169011	9.964461	10.035539	10.133472	9.866528	30	22
39	45	9.831024	10.168976	9.964525	10.035475	10.133501	9.866499	15	21
40	40	9.831058	10.168942	9.964588	10.035412	10.133530	9.866470	20	20
41	15	9.831092	10.168908	9.964651	10.035349	10.133559	9.866441	45	19
42	30	9.831126	10.168874	9.964715	10.035285	10.133588	9.866412	30	18
43	45	9.831161	10.168839	9.964778	10.035222	10.133618	9.866382	15	17
44	41	9.831195	10.168805	9.964842	10.035158	10.133647	9.866353	19	16
45	15	9.831229	10.168771	9.964905	10.035095	10.133676	9.866324	45	15
46	30	9.831263	10.168737	9.964968	10.035032	10.133705	9.866295	30	14
47	45	9.831298	10.168702	9.965032	10.034968	10.133734	9.866266	15	13
48	42	9.831332	10.168668	9.965095	10.034905	10.133763	9.866237	18	12
49	15	9.831366	10.168634	9.965158	10.034842	10.133792	9.866208	45	11
50	30	9.831400	10.168600	9.965222	10.034778	10.133821	9.866179	30	10
51	45	9.831435	10.168565	9.965285	10.034715	10.133851	9.866149	15	9
52	43	9.831469	10.168531	9.965349	10.034651	10.133880	9.866120	17	8
53	15	9.831503	10.168497	9.965412	10.034588	10.133909	9.866091	45	7
54	30	9.831537	10.168463	9.965475	10.034525	10.133938	9.866062	30	6
55	45	9.831571	10.168429	9.965539	10.034461	10.133967	9.866033	15	5
56	44	9.831606	10.168394	9.965602	10.034398	10.133996	9.866004	16	4
57	15	9.831640	10.168360	9.965665	10.034335	10.134026	9.865974	45	3
58	30	9.831674	10.168326	9.965729	10.034271	10.134055	9.865945	30	2
59	45	9.831708	10.168292	9.965792	10.034208	10.134084	9.865916	15	1
60	45	9.831742	10.168258	9.965855	10.034145	10.134113	9.865887	15	0
sec.	°	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	°	sec.
3 ^h 9 ^m .		LOG. SINES, &c.						47 deg.	

2 ^h 51 ^m .		LOG. SINES, &c. (L.)						42 deg.			
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	"	sec.	
0	45	9.831742	10.168258	9.965855	10.034145	10.134113	9.865887	15		60	
1	15	9.831776	10.168224	9.965919	10.034081	10.134142	9.865858	45		59	
2	30	9.831811	10.168189	9.965982	10.034018	10.134172	9.865828	30		58	
3	45	9.831845	10.168155	9.966045	10.033955	10.134201	9.865799	15		57	
4	46	9.831879	10.168121	9.966109	10.033891	10.134230	9.865770	14		56	
5	15	9.831913	10.168087	9.966172	10.033828	10.134259	9.865741	45		55	
6	30	9.831947	10.168053	9.966236	10.033764	10.134288	9.865712	30		54	
7	45	9.831981	10.168019	9.966299	10.033701	10.134318	9.865682	15		53	
8	47	9.832015	10.167985	9.966362	10.033638	10.134347	9.865653	13		52	
9	15	9.832050	10.167950	9.966426	10.033574	10.134376	9.865624	45		51	
10	30	9.832084	10.167916	9.966489	10.033511	10.134405	9.865595	30		50	
11	45	9.832118	10.167882	9.966552	10.033448	10.134435	9.865565	15		49	
12	48	9.832152	10.167848	9.966616	10.033384	10.134464	9.865536	12		48	
13	15	9.832186	10.167814	9.966679	10.033321	10.134493	9.865507	45		47	
14	30	9.832220	10.167780	9.966742	10.033258	10.134522	9.865478	30		46	
15	45	9.832254	10.167746	9.966806	10.033194	10.134552	9.865448	15		45	
16	49	9.832288	10.167712	9.966869	10.033131	10.134581	9.865419	11		44	
17	15	9.832322	10.167678	9.966932	10.033068	10.134610	9.865390	45		43	
18	30	9.832356	10.167644	9.966996	10.033004	10.134639	9.865361	30		42	
19	45	9.832391	10.167609	9.967059	10.032941	10.134669	9.865331	15		41	
20	50	9.832425	10.167575	9.967122	10.032878	10.134698	9.865302	10		40	
21	15	9.832459	10.167541	9.967186	10.032814	10.134727	9.865273	45		39	
22	30	9.832493	10.167507	9.967249	10.032751	10.134757	9.865243	30		38	
23	45	9.832527	10.167473	9.967313	10.032687	10.134786	9.865214	15		37	
24	51	9.832561	10.167439	9.967376	10.032624	10.134815	9.865185	9		36	
25	15	9.832595	10.167405	9.967439	10.032561	10.134844	9.865156	45		35	
26	30	9.832629	10.167371	9.967503	10.032497	10.134874	9.865126	30		34	
27	45	9.832663	10.167337	9.967566	10.032434	10.134903	9.865097	15		33	
28	52	9.832697	10.167303	9.967629	10.032371	10.134932	9.865068	8		32	
29	15	9.832731	10.167269	9.967693	10.032307	10.134962	9.865038	45		31	
30	30	9.832765	10.167235	9.967756	10.032244	10.134991	9.865009	30		30	
31	45	9.832799	10.167201	9.967819	10.032181	10.135020	9.864980	15		29	
32	53	9.832833	10.167167	9.967883	10.032117	10.135050	9.864950	7		28	
33	15	9.832867	10.167133	9.967946	10.032054	10.135079	9.864921	45		27	
34	30	9.832901	10.167099	9.968009	10.031991	10.135108	9.864892	30		26	
35	45	9.832935	10.167065	9.968073	10.031927	10.135138	9.864862	15		25	
36	54	9.832969	10.167031	9.968136	10.031864	10.135167	9.864833	6		24	
37	15	9.833003	10.166997	9.968199	10.031801	10.135196	9.864804	45		23	
38	30	9.833037	10.166963	9.968263	10.031737	10.135226	9.864774	30		22	
39	45	9.833071	10.166929	9.968326	10.031674	10.135255	9.864745	15		21	
40	55	9.833105	10.166895	9.968389	10.031611	10.135284	9.864716	5		20	
41	15	9.833139	10.166861	9.968453	10.031547	10.135314	9.864686	45		19	
42	30	9.833173	10.166827	9.968516	10.031484	10.135343	9.864657	30		18	
43	45	9.833207	10.166793	9.968579	10.031421	10.135373	9.864627	15		17	
44	56	9.833241	10.166759	9.968643	10.031357	10.135402	9.864598	4		16	
45	15	9.833275	10.166725	9.968706	10.031294	10.135431	9.864569	45		15	
46	30	9.833309	10.166691	9.968769	10.031231	10.135461	9.864539	30		14	
47	45	9.833343	10.166657	9.968833	10.031167	10.135490	9.864510	15		13	
48	57	9.833377	10.166623	9.968896	10.031104	10.135519	9.864481	3		12	
49	15	9.833410	10.166590	9.968959	10.031041	10.135549	9.864451	45		11	
50	30	9.833444	10.166556	9.969023	10.030977	10.135578	9.864422	30		10	
51	45	9.833478	10.166522	9.969086	10.030914	10.135608	9.864392	15		9	
52	58	9.833512	10.166488	9.969149	10.030851	10.135637	9.864363	2		8	
53	15	9.833546	10.166454	9.969213	10.030787	10.135667	9.864333	45		7	
54	30	9.833580	10.166420	9.969276	10.030724	10.135696	9.864304	30		6	
55	45	9.833614	10.166386	9.969339	10.030661	10.135725	9.864275	15		5	
56	59	9.833648	10.166352	9.969403	10.030597	10.135755	9.864245	1		4	
57	15	9.833682	10.166318	9.969466	10.030534	10.135784	9.864216	45		3	
58	30	9.833716	10.166284	9.969529	10.030471	10.135814	9.864186	30		2	
59	45	9.833749	10.166251	9.969592	10.030408	10.135843	9.864157	15		1	
60	60	9.833783	10.166217	9.969656	10.030344	10.135873	9.864127	0		0	
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"	sec.	
3 ^h 8 ^m .		LOG. SINES, &c.						47 deg.			

2 ^h 52 ^m .		LOG. SINES, &c. (t.)						43 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.833783	10.166217	9.969656	10.030344	10.135873	9.864127	60	60
1	15	9.833817	10.166183	9.969719	10.030281	10.135902	9.864098	45	59
2	30	9.833851	10.166149	9.969782	10.030218	10.135931	9.864069	30	58
3	45	9.833885	10.166115	9.969846	10.030154	10.135961	9.864039	15	57
4	1	9.833919	10.166081	9.969909	10.030091	10.135990	9.864010	59	56
5	15	9.833953	10.166047	9.969972	10.030028	10.136020	9.863980	45	55
6	30	9.833986	10.166014	9.970036	10.029964	10.136049	9.863951	30	54
7	45	9.834020	10.165980	9.970099	10.029901	10.136079	9.863921	15	53
8	2	9.834054	10.165946	9.970162	10.029838	10.136108	9.863892	58	52
9	15	9.834088	10.165912	9.970226	10.029774	10.136138	9.863862	45	51
10	30	9.834122	10.165878	9.970289	10.029711	10.136167	9.863833	30	50
11	45	9.834156	10.165844	9.970352	10.029648	10.136197	9.863803	15	49
12	3	9.834189	10.165811	9.970416	10.029584	10.136226	9.863774	57	48
13	15	9.834223	10.165777	9.970479	10.029521	10.136256	9.863744	45	47
14	30	9.834257	10.165743	9.970542	10.029458	10.136285	9.863715	30	46
15	45	9.834291	10.165709	9.970606	10.029394	10.136315	9.863685	15	45
16	4	9.834325	10.165675	9.970669	10.029331	10.136344	9.863656	56	44
17	15	9.834358	10.165642	9.970732	10.029268	10.136374	9.863626	45	43
18	30	9.834392	10.165608	9.970795	10.029205	10.136403	9.863597	30	42
19	45	9.834426	10.165574	9.970859	10.029141	10.136433	9.863567	15	41
20	5	9.834460	10.165540	9.970922	10.029078	10.136462	9.863538	55	40
21	15	9.834493	10.165507	9.970985	10.029015	10.136492	9.863508	45	39
22	30	9.834527	10.165473	9.971049	10.028951	10.136522	9.863478	30	38
23	45	9.834561	10.165439	9.971112	10.028888	10.136551	9.863449	15	37
24	6	9.834595	10.165405	9.971175	10.028825	10.136581	9.863419	54	36
25	15	9.834628	10.165372	9.971239	10.028761	10.136610	9.863390	45	35
26	30	9.834662	10.165338	9.971302	10.028698	10.136640	9.863360	30	34
27	45	9.834696	10.165304	9.971365	10.028635	10.136669	9.863331	15	33
28	7	9.834730	10.165270	9.971429	10.028571	10.136699	9.863301	53	32
29	15	9.834763	10.165237	9.971492	10.028508	10.136728	9.863272	45	31
30	30	9.834797	10.165203	9.971555	10.028445	10.136758	9.863242	30	30
31	45	9.834831	10.165169	9.971618	10.028382	10.136788	9.863212	15	29
32	8	9.834865	10.165135	9.971682	10.028318	10.136817	9.863183	52	28
33	15	9.834898	10.165102	9.971745	10.028255	10.136847	9.863153	45	27
34	30	9.834932	10.165068	9.971808	10.028192	10.136876	9.863124	30	26
35	45	9.834966	10.165034	9.971872	10.028128	10.136906	9.863094	15	25
36	9	9.834999	10.165001	9.971935	10.028065	10.136936	9.863064	51	24
37	15	9.835033	10.164967	9.971998	10.028002	10.136965	9.863035	45	23
38	30	9.835067	10.164933	9.972062	10.027938	10.136995	9.863005	30	22
39	45	9.835100	10.164900	9.972125	10.027875	10.137024	9.862976	15	21
40	10	9.835134	10.164866	9.972188	10.027812	10.137054	9.862946	50	20
41	15	9.835168	10.164832	9.972251	10.027749	10.137084	9.862916	45	19
42	30	9.835201	10.164799	9.972315	10.027685	10.137113	9.862887	30	18
43	45	9.835235	10.164765	9.972378	10.027622	10.137143	9.862857	15	17
44	11	9.835269	10.164731	9.972441	10.027559	10.137173	9.862827	49	16
45	15	9.835302	10.164698	9.972505	10.027495	10.137202	9.862798	45	15
46	30	9.835336	10.164664	9.972568	10.027432	10.137232	9.862768	30	14
47	45	9.835370	10.164630	9.972631	10.027369	10.137262	9.862738	15	13
48	12	9.835403	10.164597	9.972694	10.027306	10.137291	9.862709	48	12
49	15	9.835437	10.164563	9.972758	10.027242	10.137321	9.862679	45	11
50	30	9.835471	10.164529	9.972821	10.027179	10.137351	9.862649	30	10
51	45	9.835504	10.164496	9.972884	10.027116	10.137380	9.862620	15	9
52	13	9.835538	10.164462	9.972948	10.027052	10.137410	9.862590	47	8
53	15	9.835571	10.164429	9.973011	10.026989	10.137440	9.862560	45	7
54	30	9.835605	10.164395	9.973074	10.026926	10.137469	9.862531	30	6
55	45	9.835639	10.164361	9.973137	10.026863	10.137499	9.862501	15	5
56	14	9.835672	10.164328	9.973201	10.026799	10.137529	9.862471	46	4
57	15	9.835706	10.164294	9.973264	10.026736	10.137558	9.862442	45	3
58	30	9.835739	10.164261	9.973327	10.026673	10.137588	9.862412	30	2
59	45	9.835773	10.164227	9.973391	10.026609	10.137618	9.862382	15	1
60	15	9.835807	10.164193	9.973454	10.026546	10.137647	9.862353	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 7 ^m .		LOG. SINES, &c.						46 deg.	

2 ^h 53 ^m .		LOG. SINES, &c. (t.)						43 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	
0	15	9.835807	10.164193	9.973454	10.026546	10.137647	9.862353		4
1	15	9.835840	10.164160	9.973517	10.026483	10.137677	9.862323	45	
2	30	9.835874	10.164126	9.973580	10.026420	10.137707	9.862293	30	
3	45	9.835907	10.164093	9.973644	10.026356	10.137737	9.862263	15	
4	16	9.835941	10.164059	9.973707	10.026293	10.137766	9.862234		4
5	15	9.835974	10.164026	9.973770	10.026230	10.137796	9.862204	45	
6	30	9.836008	10.163992	9.973834	10.026166	10.137826	9.862174	30	
7	45	9.836041	10.163959	9.973897	10.026103	10.137855	9.862145	15	
8	17	9.836075	10.163925	9.973960	10.026040	10.137885	9.862115		4
9	15	9.836108	10.163892	9.974023	10.025977	10.137915	9.862085	45	
10	30	9.836142	10.163858	9.974087	10.025913	10.137945	9.862055	30	
11	45	9.836176	10.163824	9.974150	10.025850	10.137974	9.862026	15	
12	18	9.836209	10.163791	9.974213	10.025787	10.138004	9.861996		4
13	15	9.836243	10.163757	9.974277	10.025723	10.138034	9.861966	45	
14	30	9.836276	10.163724	9.974340	10.025660	10.138064	9.861936	30	
15	45	9.836310	10.163690	9.974403	10.025597	10.138094	9.861906	15	
16	19	9.836343	10.163657	9.974466	10.025534	10.138123	9.861877		4
17	15	9.836377	10.163623	9.974530	10.025470	10.138153	9.861847	45	
18	30	9.836410	10.163590	9.974593	10.025407	10.138183	9.861817	30	
19	45	9.836444	10.163556	9.974656	10.025344	10.138213	9.861787	15	
20	20	9.836477	10.163523	9.974719	10.025281	10.138242	9.861758		4
21	15	9.836510	10.163490	9.974783	10.025217	10.138272	9.861728	45	
22	30	9.836544	10.163456	9.974846	10.025154	10.138302	9.861698	30	
23	45	9.836577	10.163423	9.974909	10.025091	10.138332	9.861668	15	
24	21	9.836611	10.163389	9.974973	10.025027	10.138362	9.861638		3
25	15	9.836644	10.163356	9.975036	10.024964	10.138392	9.861608	45	
26	30	9.836678	10.163322	9.975099	10.024901	10.138421	9.861579	30	
27	45	9.836711	10.163289	9.975162	10.024838	10.138451	9.861549	15	
28	22	9.836745	10.163255	9.975226	10.024774	10.138481	9.861519		3
29	15	9.836778	10.163222	9.975289	10.024711	10.138511	9.861489	45	
30	30	9.836812	10.163188	9.975352	10.024648	10.138541	9.861459	30	
31	45	9.836845	10.163155	9.975415	10.024585	10.138571	9.861429	15	
32	23	9.836878	10.163122	9.975479	10.024521	10.138600	9.861400		3
33	15	9.836912	10.163088	9.975542	10.024458	10.138630	9.861370	45	
34	30	9.836945	10.163055	9.975605	10.024395	10.138660	9.861340	30	
35	45	9.836979	10.163021	9.975668	10.024332	10.138690	9.861310	15	
36	24	9.837012	10.162988	9.975732	10.024268	10.138720	9.861280		3
37	15	9.837045	10.162955	9.975795	10.024205	10.138750	9.861250	45	
38	30	9.837079	10.162921	9.975858	10.024142	10.138780	9.861220	30	
39	45	9.837112	10.162888	9.975922	10.024078	10.138809	9.861191	15	
40	25	9.837146	10.162854	9.975985	10.024015	10.138839	9.861161		3
41	15	9.837179	10.162821	9.976048	10.023952	10.138869	9.861131	45	
42	30	9.837212	10.162788	9.976111	10.023889	10.138899	9.861101	30	
43	45	9.837246	10.162754	9.976175	10.023825	10.138929	9.861071	15	
44	26	9.837279	10.162721	9.976238	10.023762	10.138959	9.861041		3
45	15	9.837312	10.162688	9.976301	10.023699	10.138989	9.861011	45	
46	30	9.837346	10.162654	9.976364	10.023636	10.139019	9.860981	30	
47	45	9.837379	10.162621	9.976428	10.023572	10.139049	9.860951	15	
48	27	9.837412	10.162588	9.976491	10.023509	10.139079	9.860921		3
49	15	9.837446	10.162554	9.976554	10.023446	10.139108	9.860892	45	
50	30	9.837479	10.162521	9.976617	10.023383	10.139138	9.860862	30	
51	45	9.837512	10.162488	9.976681	10.023319	10.139168	9.860832	15	
52	28	9.837546	10.162454	9.976744	10.023256	10.139198	9.860802		3
53	15	9.837579	10.162421	9.976807	10.023193	10.139228	9.860772	45	
54	30	9.837612	10.162388	9.976870	10.023130	10.139258	9.860742	30	
55	45	9.837646	10.162354	9.976934	10.023066	10.139288	9.860712	15	
56	29	9.837679	10.162321	9.976997	10.023003	10.139318	9.860682		3
57	15	9.837712	10.162288	9.977060	10.022940	10.139348	9.860652	45	
58	30	9.837746	10.162254	9.977123	10.022877	10.139378	9.860622	30	
59	45	9.837779	10.162221	9.977187	10.022813	10.139408	9.860592	15	
60	30	9.837812	10.162188	9.977250	10.022750	10.139438	9.860562		3
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	
3 ^h 6 ^m .		LOG. SINES, &c.						46 deg.	

2° 54'.		LOG. SINES, &c. (t.)						43 deg.	
		sine.	cosecant.	tang-nt.	cotangent.	secant.	cosine.		sec.
30		9.837812	10.162188	9.977250	10.022750	10.139438	9.860562	30	60
15		9.837845	10.162155	9.977313	10.022687	10.139468	9.860532	45	59
30		9.837879	10.162121	9.977376	10.022624	10.139498	9.860502	30	58
45		9.837912	10.162088	9.977440	10.022560	10.139528	9.860472	15	57
31		9.837945	10.162055	9.977503	10.022497	10.139558	9.860442	29	56
15		9.837978	10.162022	9.977566	10.022434	10.139588	9.860412	45	55
30		9.838012	10.161988	9.977629	10.022371	10.139618	9.860382	30	54
45		9.838045	10.161955	9.977693	10.022307	10.139648	9.860352	15	53
32		9.838078	10.161922	9.977756	10.022244	10.139678	9.860322	28	52
15		9.838111	10.161889	9.977819	10.022181	10.139708	9.860292	45	51
30		9.838145	10.161855	9.977882	10.022118	10.139738	9.860262	30	50
45		9.838178	10.161822	9.977946	10.022054	10.139768	9.860232	15	49
33		9.838211	10.161789	9.978009	10.021991	10.139798	9.860202	27	48
15		9.838244	10.161756	9.978072	10.021928	10.139828	9.860172	45	47
30		9.838278	10.161722	9.978135	10.021865	10.139858	9.860142	30	46
45		9.838311	10.161689	9.978199	10.021801	10.139888	9.860112	15	45
34		9.838344	10.161656	9.978262	10.021738	10.139918	9.860082	26	44
15		9.838377	10.161623	9.978325	10.021675	10.139948	9.860052	45	43
30		9.838410	10.161590	9.978388	10.021612	10.139978	9.860022	30	42
45		9.838444	10.161556	9.978452	10.021548	10.140008	9.859992	15	41
35		9.838477	10.161523	9.978515	10.021485	10.140038	9.859962	25	40
15		9.838510	10.161490	9.978578	10.021422	10.140068	9.859932	45	39
30		9.838543	10.161457	9.978641	10.021359	10.140098	9.859902	30	38
45		9.838576	10.161424	9.978705	10.021295	10.140128	9.859872	15	37
36		9.838610	10.161390	9.978768	10.021232	10.140158	9.859842	24	36
15		9.838643	10.161357	9.978831	10.021169	10.140188	9.859812	45	35
30		9.838676	10.161324	9.978894	10.021106	10.140218	9.859781	30	34
45		9.838709	10.161291	9.978958	10.021042	10.140248	9.859751	15	33
37		9.838742	10.161258	9.979021	10.020979	10.140279	9.859721	23	32
15		9.838775	10.161225	9.979084	10.020916	10.140309	9.859691	45	31
30		9.838808	10.161192	9.979147	10.020853	10.140339	9.859661	30	30
45		9.838842	10.161158	9.979211	10.020789	10.140369	9.859631	15	29
38		9.838875	10.161125	9.979274	10.020726	10.140399	9.859601	22	28
15		9.838908	10.161092	9.979337	10.020663	10.140429	9.859571	45	27
30		9.838941	10.161059	9.979400	10.020600	10.140459	9.859541	30	26
45		9.838974	10.161026	9.979463	10.020537	10.140490	9.859510	15	25
39		9.839007	10.160993	9.979527	10.020473	10.140520	9.859480	21	24
15		9.839040	10.160960	9.979590	10.020410	10.140550	9.859450	45	23
30		9.839073	10.160927	9.979653	10.020347	10.140580	9.859420	30	22
45		9.839106	10.160894	9.979716	10.020284	10.140610	9.859390	15	21
40		9.839140	10.160860	9.979780	10.020220	10.140640	9.859360	20	20
15		9.839173	10.160827	9.979843	10.020157	10.140670	9.859330	45	19
30		9.839206	10.160794	9.979906	10.020094	10.140700	9.859300	30	18
45		9.839239	10.160761	9.979969	10.020031	10.140731	9.859269	15	17
41		9.839272	10.160728	9.980033	10.019967	10.140761	9.859239	19	16
15		9.839305	10.160695	9.980096	10.019904	10.140791	9.859209	45	15
30		9.839338	10.160662	9.980159	10.019841	10.140821	9.859179	30	14
45		9.839371	10.160629	9.980222	10.019778	10.140851	9.859149	15	13
42		9.839404	10.160596	9.980286	10.019714	10.140881	9.859119	18	12
15		9.839437	10.160563	9.980349	10.019651	10.140912	9.859088	45	11
30		9.839470	10.160530	9.980412	10.019588	10.140942	9.859058	30	10
45		9.839503	10.160497	9.980475	10.019525	10.140972	9.859028	15	9
43		9.839536	10.160464	9.980538	10.019462	10.141002	9.858998	17	8
15		9.839569	10.160431	9.980602	10.019398	10.141032	9.858968	45	7
30		9.839602	10.160398	9.980665	10.019335	10.141063	9.858937	30	6
45		9.839635	10.160365	9.980728	10.019272	10.141093	9.858907	15	5
44		9.839668	10.160332	9.980791	10.019209	10.141123	9.858877	16	4
15		9.839701	10.160299	9.980855	10.019145	10.141153	9.858847	45	3
30		9.839734	10.160266	9.980918	10.019082	10.141184	9.858816	30	2
45		9.839767	10.160233	9.980981	10.019019	10.141214	9.858786	15	1
45		9.839800	10.160200	9.981044	10.018956	10.141244	9.858756	15	0
		cosine.	secant.	cotangent.	tangent.	cosecant.	sine.		sec.
3° 54'.		LOG. SINES, &c.						46 deg.	

2 ^h 55 ^m .		LOG. SINES, &c. (L.)						43 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	
0	45	9.839800	10.160200	9.981044	10.018956	10.141244	9.858756		15
1	15	9.839833	10.160167	9.981107	10.018893	10.141274	9.858726	45	
2	30	9.839866	10.160134	9.981171	10.018829	10.141304	9.858696	30	
3	45	9.839899	10.160101	9.981234	10.018766	10.141335	9.858665	15	
4	46	9.839932	10.160068	9.981297	10.018703	10.141365	9.858635		14
5	15	9.839965	10.160035	9.981360	10.018640	10.141395	9.858605	45	
6	30	9.839998	10.160002	9.981424	10.018576	10.141425	9.858575	30	
7	45	9.840031	10.159969	9.981487	10.018513	10.141456	9.858544	15	
8	47	9.840064	10.159936	9.981550	10.018450	10.141486	9.858514		13
9	15	9.840097	10.159903	9.981613	10.018387	10.141516	9.858484	45	
10	30	9.840130	10.159870	9.981677	10.018323	10.141547	9.858453	30	
11	45	9.840163	10.159837	9.981740	10.018260	10.141577	9.858423	15	
12	48	9.840196	10.159804	9.981803	10.018197	10.141607	9.858393		12
13	15	9.840229	10.159771	9.981866	10.018134	10.141637	9.858363	45	
14	30	9.840262	10.159738	9.981929	10.018071	10.141668	9.858332	30	
15	45	9.840295	10.159705	9.981993	10.018007	10.141698	9.858302	15	
16	49	9.840328	10.159672	9.982056	10.017944	10.141728	9.858272		11
17	15	9.840361	10.159639	9.982119	10.017881	10.141759	9.858241	45	
18	30	9.840393	10.159607	9.982182	10.017818	10.141789	9.858211	30	
19	45	9.840426	10.159574	9.982245	10.017755	10.141819	9.858181	15	
20	50	9.840459	10.159541	9.982309	10.017691	10.141850	9.858150		10
21	15	9.840492	10.159508	9.982372	10.017628	10.141880	9.858120	45	
22	30	9.840525	10.159475	9.982435	10.017565	10.141910	9.858090	30	
23	45	9.840558	10.159442	9.982498	10.017502	10.141941	9.858059	15	
24	51	9.840591	10.159409	9.982562	10.017438	10.141971	9.858029		9
25	15	9.840624	10.159376	9.982625	10.017375	10.142001	9.857999	45	
26	30	9.840656	10.159344	9.982688	10.017312	10.142032	9.857968	30	
27	45	9.840689	10.159311	9.982751	10.017249	10.142062	9.857932	15	
28	52	9.840722	10.159278	9.982814	10.017186	10.142092	9.857908		8
29	15	9.840755	10.159245	9.982878	10.017122	10.142123	9.857877	45	
30	30	9.840788	10.159212	9.982941	10.017059	10.142153	9.857847	30	
31	45	9.840821	10.159179	9.983004	10.016996	10.142183	9.857817	15	
32	53	9.840854	10.159146	9.983067	10.016933	10.142214	9.857786		7
33	15	9.840886	10.159114	9.983131	10.016869	10.142244	9.857756	45	
34	30	9.840919	10.159081	9.983194	10.016806	10.142274	9.857726	30	
35	45	9.840952	10.159048	9.983257	10.016743	10.142305	9.857695	15	
36	54	9.840985	10.159015	9.983320	10.016680	10.142335	9.857665		6
37	15	9.841018	10.158982	9.983383	10.016617	10.142366	9.857634	45	
38	30	9.841051	10.158949	9.983447	10.016553	10.142396	9.857604	30	
39	45	9.841083	10.158917	9.983510	10.016490	10.142426	9.857574	15	
40	55	9.841116	10.158884	9.983573	10.016427	10.142457	9.857543		5
41	15	9.841149	10.158851	9.983636	10.016364	10.142487	9.857513	45	
42	30	9.841182	10.158818	9.983699	10.016301	10.142518	9.857482	30	
43	45	9.841215	10.158785	9.983763	10.016237	10.142548	9.857452	15	
44	56	9.841247	10.158753	9.983826	10.016174	10.142579	9.857421		4
45	15	9.841280	10.158720	9.983889	10.016111	10.142609	9.857391	45	
46	30	9.841313	10.158687	9.983952	10.016048	10.142639	9.857361	30	
47	45	9.841346	10.158654	9.984015	10.015985	10.142670	9.857330	15	
48	57	9.841378	10.158622	9.984079	10.015921	10.142700	9.857300		3
49	15	9.841411	10.158589	9.984142	10.015858	10.142731	9.857269	45	
50	30	9.841444	10.158556	9.984205	10.015795	10.142761	9.857239	30	
51	45	9.841477	10.158523	9.984268	10.015732	10.142792	9.857208	15	
52	58	9.841509	10.158491	9.984331	10.015669	10.142822	9.857178		2
53	15	9.841542	10.158458	9.984395	10.015605	10.142853	9.857147	45	
54	30	9.841575	10.158425	9.984458	10.015542	10.142883	9.857117	30	
55	45	9.841608	10.158392	9.984521	10.015479	10.142914	9.857086	15	
56	59	9.841640	10.158360	9.984584	10.015416	10.142944	9.857056		1
57	15	9.841673	10.158327	9.984648	10.015352	10.142974	9.857026	45	
58	30	9.841706	10.158294	9.984711	10.015289	10.143005	9.856995	30	
59	45	9.841739	10.158261	9.984774	10.015226	10.143035	9.856965	15	
60	60	9.841771	10.158229	9.984837	10.015163	10.143066	9.856934		0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	
3 ^h 4 ^m .		LOG. SINES, &c.						46 deg.	

2 ^h 56 ^m .		LOG. SINES, &c. (t.)						44 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	0	9.841771	10.158229	9.984837	10.015163	10.143066	9.856934	60	60
1	15	9.841804	10.158196	9.984900	10.015100	10.143096	9.856904	45	59
2	30	9.841837	10.158163	9.984964	10.015036	10.143127	9.856873	30	58
3	45	9.841869	10.158131	9.985027	10.014973	10.143157	9.856843	15	57
4	1	9.841902	10.158098	9.985090	10.014910	10.143188	9.856812	59	56
5	15	9.841935	10.158065	9.985153	10.014847	10.143219	9.856781	45	55
6	30	9.841967	10.158033	9.985216	10.014784	10.143249	9.856751	30	54
7	45	9.842000	10.158000	9.985280	10.014720	10.143280	9.856720	15	53
8	2	9.842033	10.157967	9.985343	10.014657	10.143310	9.856690	58	52
9	15	9.842065	10.157935	9.985406	10.014594	10.143341	9.856659	45	51
10	30	9.842098	10.157902	9.985469	10.014531	10.143370	9.856630	30	50
11	45	9.842131	10.157869	9.985532	10.014468	10.143402	9.856598	15	49
12	3	9.842163	10.157837	9.985596	10.014404	10.143432	9.856568	57	48
13	15	9.842196	10.157804	9.985659	10.014341	10.143463	9.856537	45	47
14	30	9.842229	10.157771	9.985722	10.014278	10.143493	9.856507	30	46
15	45	9.842261	10.157739	9.985785	10.014215	10.143524	9.856476	15	45
16	4	9.842294	10.157706	9.985848	10.014152	10.143555	9.856445	56	44
17	15	9.842327	10.157673	9.985912	10.014088	10.143585	9.856415	45	43
18	30	9.842359	10.157641	9.985975	10.014025	10.143616	9.856384	30	42
19	45	9.842392	10.157608	9.986038	10.013962	10.143646	9.856354	15	41
20	5	9.842424	10.157576	9.986101	10.013899	10.143677	9.856323	55	40
21	15	9.842457	10.157543	9.986164	10.013836	10.143707	9.856293	45	39
22	30	9.842490	10.157510	9.986228	10.013772	10.143738	9.856262	30	38
23	45	9.842522	10.157478	9.986291	10.013709	10.143769	9.856231	15	37
24	6	9.842555	10.157445	9.986354	10.013646	10.143799	9.856201	54	36
25	15	9.842587	10.157413	9.986417	10.013583	10.143830	9.856170	45	35
26	30	9.842620	10.157380	9.986480	10.013520	10.143860	9.856140	30	34
27	45	9.842653	10.157347	9.986544	10.013456	10.143891	9.856109	15	33
28	7	9.842685	10.157315	9.986607	10.013393	10.143922	9.856078	53	32
29	15	9.842718	10.157282	9.986670	10.013330	10.143952	9.856048	45	31
30	30	9.842750	10.157250	9.986733	10.013267	10.143983	9.856017	30	30
31	45	9.842783	10.157217	9.986796	10.013204	10.144014	9.855986	15	29
32	8	9.842815	10.157185	9.986860	10.013140	10.144044	9.855956	52	28
33	15	9.842848	10.157152	9.986923	10.013077	10.144075	9.855925	45	27
34	30	9.842880	10.157120	9.986986	10.013014	10.144106	9.855894	30	26
35	45	9.842913	10.157087	9.987049	10.012951	10.144136	9.855864	15	25
36	9	9.842946	10.157054	9.987112	10.012888	10.144167	9.855833	51	24
37	15	9.842978	10.157022	9.987175	10.012825	10.144197	9.855803	45	23
38	30	9.843011	10.156989	9.987239	10.012761	10.144228	9.855772	30	22
39	45	9.843044	10.156957	9.987302	10.012698	10.144259	9.855741	15	21
40	10	9.843076	10.156924	9.987365	10.012635	10.144289	9.855711	50	20
41	15	9.843108	10.156892	9.987428	10.012572	10.144320	9.855680	45	19
42	30	9.843141	10.156859	9.987491	10.012509	10.144351	9.855649	30	18
43	45	9.843173	10.156827	9.987555	10.012445	10.144382	9.855618	15	17
44	11	9.843206	10.156794	9.987618	10.012382	10.144412	9.855588	49	16
45	15	9.843238	10.156762	9.987681	10.012319	10.144443	9.855557	45	15
46	30	9.843271	10.156729	9.987744	10.012256	10.144474	9.855526	30	14
47	45	9.843303	10.156697	9.987807	10.012193	10.144504	9.855496	15	13
48	12	9.843336	10.156664	9.987871	10.012129	10.144535	9.855465	48	12
49	15	9.843368	10.156632	9.987934	10.012066	10.144566	9.855434	45	11
50	30	9.843401	10.156599	9.987997	10.012003	10.144596	9.855404	30	10
51	45	9.843433	10.156567	9.988060	10.011940	10.144627	9.855373	15	9
52	13	9.843465	10.156535	9.988123	10.011877	10.144658	9.855342	47	8
53	15	9.843498	10.156502	9.988187	10.011813	10.144689	9.855311	45	7
54	30	9.843530	10.156470	9.988250	10.011750	10.144719	9.855281	30	6
55	45	9.843563	10.156437	9.988313	10.011687	10.144750	9.855250	15	5
56	14	9.843595	10.156405	9.988376	10.011624	10.144781	9.855219	46	4
57	15	9.843628	10.156372	9.988439	10.011561	10.144812	9.855188	45	3
58	30	9.843660	10.156340	9.988502	10.011498	10.144842	9.855158	30	2
59	45	9.843693	10.156307	9.988566	10.011434	10.144873	9.855127	15	1
60	15	9.843725	10.156275	9.988629	10.011371	10.144904	9.855096	45	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 3 ^m .		LOG. SINES, &c.						45 deg.	

2° 57'.		LOG. SINES, &c. (t.)						44 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	'
0	15	9.843725	10.156275	9.988629	10.011371	10.144904	9.855096		45
1	15	9.843757	10.156243	9.988692	10.011308	10.144935	9.855065	45	
2	30	9.843790	10.156210	9.988755	10.011245	10.144965	9.855035	30	
3	45	9.843822	10.156178	9.988818	10.011182	10.144996	9.855004	15	
4	16	9.843855	10.156145	9.988882	10.011118	10.145027	9.854973		44
5	15	9.843887	10.156113	9.988945	10.011055	10.145058	9.854942	45	
6	30	9.843919	10.156081	9.989008	10.010992	10.145089	9.854911	30	
7	45	9.843952	10.156048	9.989071	10.010929	10.145119	9.854881	15	
8	17	9.843984	10.156016	9.989134	10.010866	10.145150	9.854850		43
9	15	9.844017	10.155983	9.989198	10.010802	10.145181	9.854819	45	
10	30	9.844049	10.155951	9.989261	10.010739	10.145212	9.854788	30	
11	45	9.844081	10.155919	9.989324	10.010676	10.145243	9.854757	15	
12	18	9.844114	10.155886	9.989387	10.010613	10.145273	9.854727		42
13	15	9.844146	10.155854	9.989450	10.010550	10.145304	9.854696	45	
14	30	9.844178	10.155822	9.989513	10.010487	10.145335	9.854665	30	
15	45	9.844211	10.155789	9.989577	10.010423	10.145366	9.854634	15	
16	19	9.844243	10.155757	9.989640	10.010360	10.145397	9.854603		41
17	15	9.844275	10.155725	9.989703	10.010297	10.145428	9.854572	45	
18	30	9.844308	10.155692	9.989766	10.010234	10.145458	9.854542	30	
19	45	9.844340	10.155660	9.989829	10.010171	10.145489	9.854511	15	
20	20	9.844372	10.155628	9.989893	10.010107	10.145520	9.854480		40
21	15	9.844405	10.155595	9.989956	10.010044	10.145551	9.854449	45	
22	30	9.844437	10.155563	9.990019	10.009981	10.145582	9.854418	30	
23	45	9.844469	10.155531	9.990082	10.009918	10.145613	9.854387	15	
24	21	9.844502	10.155498	9.990145	10.009855	10.145644	9.854356		39
25	15	9.844534	10.155466	9.990208	10.009792	10.145674	9.854326	45	
26	30	9.844566	10.155434	9.990272	10.009728	10.145705	9.854295	30	
27	45	9.844599	10.155401	9.990335	10.009665	10.145736	9.854264	15	
28	22	9.844631	10.155369	9.990398	10.009602	10.145767	9.854233		38
29	15	9.844663	10.155337	9.990461	10.009539	10.145798	9.854202	45	
30	30	9.844695	10.155305	9.990524	10.009476	10.145829	9.854171	30	
31	45	9.844728	10.155272	9.990588	10.009412	10.145860	9.854140	15	
32	23	9.844760	10.155240	9.990651	10.009349	10.145891	9.854109		37
33	15	9.844792	10.155208	9.990714	10.009286	10.145922	9.854078	45	
34	30	9.844825	10.155175	9.990777	10.009223	10.145953	9.854047	30	
35	45	9.844857	10.155143	9.990840	10.009160	10.145983	9.854017	15	
36	24	9.844889	10.155111	9.990903	10.009097	10.146014	9.853986		36
37	15	9.844921	10.155079	9.990967	10.009033	10.146045	9.853955	45	
38	30	9.844954	10.155046	9.991030	10.008970	10.146076	9.853924	30	
39	45	9.844986	10.155014	9.991093	10.008907	10.146107	9.853893	15	
40	25	9.845018	10.154982	9.991156	10.008844	10.146138	9.853862		35
41	15	9.845050	10.154950	9.991219	10.008781	10.146169	9.853831	45	
42	30	9.845082	10.154918	9.991283	10.008717	10.146200	9.853800	30	
43	45	9.845115	10.154885	9.991346	10.008654	10.146231	9.853769	15	
44	26	9.845147	10.154853	9.991409	10.008591	10.146262	9.853738		34
45	15	9.845179	10.154821	9.991472	10.008528	10.146293	9.853707	45	
46	30	9.845211	10.154789	9.991535	10.008465	10.146324	9.853676	30	
47	45	9.845244	10.154756	9.991598	10.008402	10.146355	9.853645	15	
48	27	9.845276	10.154724	9.991662	10.008338	10.146386	9.853614		33
49	15	9.845308	10.154692	9.991725	10.008275	10.146417	9.853583	45	
50	30	9.845340	10.154660	9.991788	10.008212	10.146448	9.853552	30	
51	45	9.845372	10.154628	9.991851	10.008149	10.146479	9.853521	15	
52	28	9.845404	10.154596	9.991914	10.008086	10.146510	9.853490		32
53	15	9.845437	10.154563	9.991977	10.008023	10.146541	9.853459	45	
54	30	9.845469	10.154531	9.992041	10.007959	10.146572	9.853428	30	
55	45	9.845501	10.154499	9.992104	10.007896	10.146603	9.853397	15	
56	29	9.845533	10.154467	9.992167	10.007833	10.146634	9.853366		31
57	15	9.845565	10.154435	9.992230	10.007770	10.146665	9.853335	45	
58	30	9.845597	10.154403	9.992293	10.007707	10.146696	9.853304	30	
59	45	9.845630	10.154370	9.992357	10.007643	10.146727	9.853273	15	
60	30	9.845662	10.154338	9.992420	10.007580	10.146758	9.853242		30
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	'
3° 2'.		LOG. SINES, &c.						45 deg.	

2 ^h 58 ^m .			LOG. SINES, &c. (t.)						44 deg.		
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosec.	"	"	sec.	
0	30	9.845662	10.154338	9.992420	10.007580	10.146758	9.853242	30		60	
1	15	9.845694	10.154306	9.992483	10.007517	10.146789	9.853211	45		59	
2	30	9.845726	10.154274	9.992546	10.007454	10.146820	9.853180	30		58	
3	45	9.845758	10.154242	9.992609	10.007391	10.146851	9.853149	15		57	
4	31	9.845790	10.154210	9.992672	10.007328	10.146882	9.853118	29		56	
5	15	9.845822	10.154178	9.992736	10.007264	10.146913	9.853087	45		55	
6	30	9.845854	10.154146	9.992799	10.007201	10.146944	9.853056	30		54	
7	45	9.845887	10.154113	9.992862	10.007138	10.146975	9.853025	15		53	
8	32	9.845919	10.154081	9.992925	10.007075	10.147006	9.852994	28		52	
9	15	9.845951	10.154049	9.992988	10.007012	10.147038	9.852962	45		51	
10	30	9.845983	10.154017	9.993051	10.006949	10.147069	9.852931	30		50	
11	45	9.846015	10.153985	9.993115	10.006885	10.147100	9.852900	15		49	
12	33	9.846047	10.153953	9.993178	10.006822	10.147131	9.852869	27		48	
13	15	9.846079	10.153921	9.993241	10.006759	10.147162	9.852838	45		47	
14	30	9.846111	10.153889	9.993304	10.006696	10.147193	9.852807	30		46	
15	45	9.846143	10.153857	9.993367	10.006633	10.147224	9.852776	15		45	
16	34	9.846175	10.153825	9.993430	10.006570	10.147255	9.852745	26		44	
17	15	9.846207	10.153793	9.993494	10.006506	10.147286	9.852714	45		43	
18	30	9.846239	10.153761	9.993557	10.006443	10.147317	9.852683	30		42	
19	45	9.846272	10.153728	9.993620	10.006380	10.147349	9.852651	15		41	
20	35	9.846304	10.153696	9.993683	10.006317	10.147380	9.852620	25		40	
21	15	9.846336	10.153664	9.993746	10.006254	10.147411	9.852589	45		39	
22	30	9.846368	10.153632	9.993810	10.006190	10.147442	9.852558	30		38	
23	45	9.846400	10.153600	9.993873	10.006127	10.147473	9.852527	15		37	
24	36	9.846432	10.153568	9.993936	10.006064	10.147504	9.852496	24		36	
25	15	9.846464	10.153536	9.993999	10.006001	10.147535	9.852465	45		35	
26	30	9.846496	10.153504	9.994062	10.005938	10.147566	9.852434	30		34	
27	45	9.846528	10.153472	9.994125	10.005875	10.147598	9.852402	15		33	
28	37	9.846560	10.153440	9.994189	10.005811	10.147629	9.852371	23		32	
29	15	9.846592	10.153408	9.994252	10.005748	10.147660	9.852340	45		31	
30	30	9.846624	10.153376	9.994315	10.005685	10.147691	9.852309	30		30	
31	45	9.846656	10.153344	9.994378	10.005622	10.147722	9.852278	15		29	
32	38	9.846688	10.153312	9.994441	10.005559	10.147753	9.852247	22		28	
33	15	9.846720	10.153280	9.994504	10.005496	10.147785	9.852215	45		27	
34	30	9.846752	10.153248	9.994568	10.005432	10.147816	9.852184	30		26	
35	45	9.846784	10.153216	9.994631	10.005369	10.147847	9.852153	15		25	
36	39	9.846816	10.153184	9.994694	10.005306	10.147878	9.852122	21		24	
37	15	9.846848	10.153152	9.994757	10.005243	10.147909	9.852091	45		23	
38	30	9.846880	10.153120	9.994820	10.005180	10.147941	9.852059	30		22	
39	45	9.846912	10.153088	9.994883	10.005117	10.147972	9.852028	15		21	
40	40	9.846944	10.153056	9.994947	10.005053	10.148003	9.851997	20		20	
41	15	9.846976	10.153024	9.995010	10.004990	10.148034	9.851966	45		19	
42	30	9.847007	10.152993	9.995073	10.004927	10.148066	9.851934	30		18	
43	45	9.847039	10.152961	9.995136	10.004864	10.148097	9.851903	15		17	
44	41	9.847071	10.152929	9.995199	10.004801	10.148128	9.851872	19		16	
45	15	9.847103	10.152897	9.995262	10.004738	10.148159	9.851841	45		15	
46	30	9.847135	10.152865	9.995326	10.004674	10.148190	9.851810	30		14	
47	45	9.847167	10.152833	9.995389	10.004611	10.148222	9.851778	15		13	
48	42	9.847199	10.152801	9.995452	10.004548	10.148253	9.851747	18		12	
49	15	9.847231	10.152769	9.995515	10.004485	10.148284	9.851716	45		11	
50	30	9.847263	10.152737	9.995578	10.004422	10.148315	9.851685	30		10	
51	45	9.847295	10.152705	9.995641	10.004359	10.148347	9.851653	15		9	
52	43	9.847327	10.152673	9.995705	10.004295	10.148378	9.851622	17		8	
53	15	9.847359	10.152641	9.995768	10.004232	10.148409	9.851591	45		7	
54	30	9.847390	10.152610	9.995831	10.004169	10.148441	9.851559	30		6	
55	45	9.847422	10.152578	9.995894	10.004106	10.148472	9.851528	15		5	
56	44	9.847454	10.152546	9.995957	10.004043	10.148503	9.851497	16		4	
57	15	9.847486	10.152514	9.996020	10.003980	10.148534	9.851466	45		3	
58	30	9.847518	10.152482	9.996084	10.003916	10.148566	9.851434	30		2	
59	45	9.847550	10.152450	9.996147	10.003853	10.148597	9.851403	15		1	
60	45	9.847582	10.152418	9.996210	10.003790	10.148628	9.851372	15		0	
sec.	"	cosec.	secant.	cotangent.	tangent.	cosecant.	sine.	"	"	sec.	
3 ^h 1 ^m .			LOG. SINES, &c.						45 deg.		

2 ^h 59 ^m		LOG. SINES, &c. (t.)						44 deg.	
sec.	"	sine.	cosecant.	tangent.	cotangent.	secant.	cosine.	"	sec.
0	45	9.847582	10.152418	9.996210	10.003790	10.148628	9.851372	15	60
1	15	9.847614	10.152386	9.996273	10.003727	10.148660	9.851340	45	59
2	30	9.847645	10.152355	9.996336	10.003664	10.148691	9.851309	30	58
3	45	9.847677	10.152323	9.996399	10.003601	10.148722	9.851278	15	57
4	46	9.847709	10.152291	9.996463	10.003537	10.148754	9.851246	14	56
5	15	9.847741	10.152259	9.996526	10.003474	10.148785	9.851215	45	55
6	30	9.847773	10.152227	9.996589	10.003411	10.148816	9.851184	30	54
7	45	9.847805	10.152195	9.996652	10.003348	10.148848	9.851152	15	53
8	47	9.847836	10.152164	9.996715	10.003285	10.148879	9.851121	13	52
9	15	9.847868	10.152132	9.996778	10.003222	10.148910	9.851090	45	51
10	30	9.847900	10.152100	9.996842	10.003158	10.148942	9.851058	30	50
11	45	9.847932	10.152068	9.996905	10.003095	10.148973	9.851027	15	49
12	48	9.847964	10.152036	9.996968	10.003032	10.149004	9.850996	12	48
13	15	9.847995	10.152005	9.997031	10.002969	10.149036	9.850964	45	47
14	30	9.848027	10.151973	9.997094	10.002906	10.149067	9.850933	30	46
15	45	9.848059	10.151941	9.997157	10.002843	10.149098	9.850902	15	45
16	49	9.848091	10.151909	9.997221	10.002779	10.149130	9.850870	11	44
17	15	9.848123	10.151877	9.997284	10.002716	10.149161	9.850839	45	43
18	30	9.848154	10.151846	9.997347	10.002653	10.149193	9.850807	30	42
19	45	9.848186	10.151814	9.997410	10.002590	10.149224	9.850776	15	41
20	50	9.848218	10.151782	9.997473	10.002527	10.149255	9.850745	10	40
21	15	9.848250	10.151750	9.997536	10.002464	10.149287	9.850713	45	39
22	30	9.848281	10.151719	9.997600	10.002400	10.149318	9.850682	30	38
23	45	9.848313	10.151687	9.997663	10.002337	10.149350	9.850650	15	37
24	51	9.848345	10.151655	9.997726	10.002274	10.149381	9.850619	9	36
25	15	9.848377	10.151623	9.997789	10.002211	10.149412	9.850588	45	35
26	30	9.848408	10.151592	9.997852	10.002148	10.149444	9.850556	30	34
27	45	9.848440	10.151560	9.997915	10.002085	10.149475	9.850525	15	33
28	52	9.848472	10.151528	9.997979	10.002021	10.149507	9.850493	8	32
29	15	9.848504	10.151496	9.998042	10.001958	10.149538	9.850462	45	31
30	30	9.848535	10.151465	9.998105	10.001895	10.149570	9.850430	30	30
31	45	9.848567	10.151433	9.998168	10.001832	10.149601	9.850399	15	29
32	53	9.848599	10.151401	9.998231	10.001769	10.149633	9.850367	7	28
33	15	9.848631	10.151369	9.998294	10.001706	10.149664	9.850336	45	27
34	30	9.848662	10.151338	9.998358	10.001642	10.149695	9.850305	30	26
35	45	9.848694	10.151306	9.998421	10.001579	10.149727	9.850273	15	25
36	54	9.848726	10.151274	9.998484	10.001516	10.149758	9.850242	6	24
37	15	9.848757	10.151243	9.998547	10.001453	10.149790	9.850210	45	23
38	30	9.848789	10.151211	9.998610	10.001390	10.149821	9.850179	30	22
39	45	9.848821	10.151179	9.998673	10.001327	10.149853	9.850147	15	21
40	55	9.848852	10.151148	9.998737	10.001263	10.149884	9.850116	5	20
41	15	9.848884	10.151116	9.998800	10.001200	10.149916	9.850084	45	19
42	30	9.848916	10.151084	9.998863	10.001137	10.149947	9.850053	30	18
43	45	9.848947	10.151053	9.998926	10.001074	10.149979	9.850021	15	17
44	56	9.848979	10.151021	9.998989	10.001011	10.150010	9.849990	4	16
45	15	9.849011	10.150989	9.999052	10.000948	10.150042	9.849958	45	15
46	30	9.849042	10.150958	9.999116	10.000884	10.150073	9.849927	30	14
47	45	9.849074	10.150926	9.999179	10.000821	10.150105	9.849895	15	13
48	57	9.849106	10.150894	9.999242	10.000758	10.150136	9.849864	3	12
49	15	9.849137	10.150863	9.999305	10.000695	10.150168	9.849832	45	11
50	30	9.849169	10.150831	9.999368	10.000632	10.150199	9.849801	30	10
51	45	9.849201	10.150799	9.999431	10.000569	10.150231	9.849769	15	9
52	58	9.849232	10.150768	9.999495	10.000505	10.150263	9.849737	2	8
53	15	9.849264	10.150736	9.999558	10.000442	10.150294	9.849706	45	7
54	30	9.849295	10.150705	9.999621	10.000379	10.150326	9.849674	30	6
55	45	9.849327	10.150673	9.999684	10.000316	10.150357	9.849643	15	5
56	59	9.849359	10.150641	9.999747	10.000253	10.150389	9.849611	1	4
57	15	9.849390	10.150610	9.999810	10.000190	10.150420	9.849580	45	3
58	30	9.849422	10.150578	9.999874	10.000126	10.150452	9.849548	30	2
59	45	9.849453	10.150547	9.999937	10.000063	10.150483	9.849517	15	1
60	60	9.849485	10.150515	10.000000	10.000000	10.150515	9.849485	0	0
sec.	"	cosine.	secant.	cotangent.	tangent.	cosecant.	sine.	"	sec.
3 ^h 0 ^m .		LOG. SINES, &c.						45 deg.	

PROPORTIONAL PARTS.

Consider as many right hand figures decimal fractions as case requires, and the same number of decimal fractions in N^r. taken out as in N^r. entered with.

15	14	13	*12*	11	10	9	8	7	6	5	4	3	2	1	$\frac{1}{2}$	* 12
60	56	52	48	44	40	36	32	28	24	20	16	12	8	4	1	for min.
1250	1167	1083	1000	917	833	750	667	583	500	417	333	250	167	83	21	15000
1300	1213	1127	1040	953	867	780	693	607	520	433	347	260	173	87	22	15600
1350	1260	1170	1080	990	900	810	720	630	540	450	360	270	180	90	23	16200
1400	1307	1213	1120	1027	933	840	747	653	560	467	373	280	187	93	24	16800
1450	1353	1257	1160	1063	967	870	773	677	580	483	387	290	193	97	25	17400
1500	1400	1300	1200	1100	1000	900	800	700	600	500	400	300	200	100	26	18000
1550	1447	1343	1240	1137	1033	930	827	723	620	517	413	310	207	103	27	18600
1600	1493	1387	1280	1173	1067	960	853	747	640	533	427	320	213	107	28	19200
1650	1540	1430	1320	1210	1100	990	880	770	660	550	440	330	220	110	29	19800
1700	1587	1473	1360	1247	1133	1020	907	793	680	567	453	340	227	113	30	20400
1750	1633	1517	1400	1283	1167	1050	933	817	700	583	467	350	233	117	31	21000
1800	1680	1560	1440	1320	1200	1080	960	840	720	600	480	360	240	120	32	21600
1850	1727	1603	1480	1357	1233	1110	987	863	740	617	493	370	247	123	33	22200
1900	1773	1647	1520	1393	1267	1140	1013	887	760	633	507	380	253	127	34	22800
1950	1820	1690	1560	1430	1300	1170	1040	910	780	650	520	390	260	130	35	23400
2000	1867	1733	1600	1467	1333	1200	1067	933	800	667	533	400	267	133	36	24000
2050	1913	1777	1640	1503	1367	1230	1093	957	820	683	547	410	273	137	37	24600
2100	1960	1820	1680	1540	1400	1260	1130	980	840	700	560	420	280	140	38	25200
2150	2007	1863	1720	1577	1433	1290	1147	1003	860	717	573	430	287	143	39	25800
2200	2053	1907	1760	1613	1467	1320	1173	1027	880	733	587	440	293	147	40	26400
2250	2100	1950	1800	1650	1500	1350	1200	1050	900	750	600	450	300	150	41	27000
2300	2147	1993	1840	1687	1533	1380	1227	1073	920	767	613	460	307	153	42	27600
2350	2193	2037	1880	1723	1567	1410	1253	1097	940	793	627	470	313	157	43	28200
2400	2240	2080	1920	1760	1600	1440	1280	1120	960	800	640	480	320	160	44	28800
2450	2287	2123	1960	1797	1633	1470	1307	1143	980	817	653	490	327	163	45	29400
2500	2333	2167	2000	1833	1667	1500	1333	1167	1000	833	667	500	333	167	46	30000
2550	2380	2210	2040	1870	1700	1530	1360	1190	1030	860	690	510	340	170	47	30600
2600	2427	2253	2080	1907	1733	1560	1387	1213	1040	867	693	520	347	173	48	31200
2650	2473	2297	2120	1943	1767	1590	1413	1237	1060	883	707	530	353	177	49	31800
2700	2520	2340	2160	1980	1800	1620	1440	1260	1080	900	720	540	360	180	50	32400
2750	2567	2383	2200	2017	1833	1650	1467	1283	1100	917	733	550	367	183	51	33000
2800	2613	2427	2240	2053	1867	1680	1493	1307	1120	933	747	560	373	187	52	33600
2850	2660	2470	2280	2090	1900	1710	1520	1330	1140	950	760	570	380	190	53	34200
2900	2707	2513	2320	2127	1933	1740	1547	1353	1160	967	773	580	387	193	54	34800
2950	2753	2557	2360	2163	1967	1770	1573	1377	1180	983	787	590	393	197	55	35400
3000	2800	2600	2400	2200	2000	1800	1600	1400	1200	1000	800	600	400	200	56	36000
3050	2847	2643	2440	2237	2033	1830	1627	1423	1220	1017	813	610	407	203	57	36600
3100	2893	2687	2480	2273	2067	1860	1653	1447	1240	1033	827	620	413	207	58	37200
3150	2940	2730	2520	2310	2100	1890	1680	1470	1260	1050	840	630	420	210	59	37800
3200	2987	2773	2560	2347	2133	1920	1707	1493	1280	1067	853	640	427	213	60	38400
3250	3033	2817	2600	2383	2167	1950	1733	1517	1300	1083	867	650	433	217	61	39000
3300	3080	2860	2640	2420	2200	1980	1760	1540	1320	1100	880	660	440	220	62	39600
3350	3127	2903	2680	2457	2233	2010	1787	1563	1340	1117	893	670	447	223	63	40200
3400	3173	2947	2720	2493	2267	2040	1813	1587	1360	1133	907	680	453	227	64	40800
3450	3220	2990	2760	2530	2300	2070	1840	1610	1380	1150	920	690	460	230	65	41400
3500	3267	3033	2800	2567	2333	2100	1867	1633	1400	1167	933	700	467	233	66	42000
3550	3313	3077	2840	2603	2367	2130	1893	1653	1420	1183	947	710	473	237	67	42600
3600	3360	3120	2880	2640	2400	2160	1920	1680	1440	1200	960	720	480	240	68	43200
3650	3407	3163	2920	2677	2433	2190	1947	1703	1460	1217	973	730	487	243	69	43800
3700	3453	3207	2960	2713	2467	2220	1973	1723	1480	1233	987	740	493	247	70	44400
3750	3500	3250	3000	2750	2500	2250	2000	1750	1500	1250	1000	750	500	250	71	45000
3800	3547	3293	3040	2787	2533	2280	2027	1773	1520	1267	1013	760	507	253	72	45600
3850	3593	3337	3080	2823	2567	2310	2053	1793	1540	1283	1027	770	513	257	73	46200
3900	3640	3380	3120	2860	2600	2340	2080	1813	1560	1300	1040	780	520	260	74	46800
3950	3687	3423	3160	2897	2633	2370	2107	1833	1580	1317	1053	790	527	263	75	47400
4000	3733	3467	3200	2933	2667	2400	2133	1853	1600	1333	1067	800	533	267	76	48000
4050	3780	3510	3240	2970	2700	2430	2160	1873	1620	1350	1083	810	540	270	77	48600
4100	3827	3553	3280	3007	2733	2460	2187	1893	1640	1367	1097	820	547	273	78	49200
4150	3873	3597	3320	3043	2767	2490	2213	1913	1660	1383	1113	830	553	277	79	49800
4200	3920	3640	3360	3080	2800	2520	2240	1940	1680	1400	1130	840	560	280	80	50400
4250	3967	3683	3400	3117	2833	2550	2267	1963	1700	1417	1143	850	567	283	81	51000
4300	4013	3727	3440	3153	2867	2580	2293	1983	1720	1433	1157	860	573	287	82	51600
4350	4060	3770	3480	3190	2900	2610	2320	2003	1740	1450	1173	870	580	290	83	52200
4400	4107	3813	3520	3227	2933	2640	2347	2023	1760	1467	1183	880	587	293	84	52800
4450	4153	3857	3560	3263	2967	2670	2373	2043	1780	1483	1200	890	593	297	85	53400
4500	4200	3900	3600	3300	3000	2700	2400	2070	1800	1500	1217	900	600	300	86	54000
4550	4247	3943	3640	3337	3033	2730	2427	2093	1820	1517	1233	910	607	303	87	54600
4600	4293	3987	3680	3373	3067	2760	2453	2113	1840	1533	1247	920	613	307	88	55200
4650	4340	4030	3720	3410	3100	2790	2480	2133	1860	1550	1263	930	620	310	89	55800
4700	4387	4073	3760	3447	3133	2820	2507	2153	1880	1567	1273	940	627	313	90	56400
4750	4433	4117	3800	3483	3167	2850	2533	2173	1900	1583	1287	950	633	317	91	57000
4800	4480	4160	3840	3520	3200	2880	2560	2193	1920	1600	1300	960	640	320	92	57600
4850	4527	4203	3880	3557	3233	2910	2587	2213	1940	1617	1313	970	647	323	93	58200
4900	4573	4247	3920	3593	3267	2940	2613	2233	1960	1633	1327	980	653	327	94	58800
4950	4620	4290	3960	3630	3300	2970	2640	2253	1980	1650	1340	990	660	330	95	59400
5000	4667	4333	4000	3667	3333	3000	2667	2273	2000	1667	1353	1000	667	333	96	60000
5050	4713	4377	4040	3703	3367	3030	2693	2293	2020	1683	1367	1010	673	337	97	60600
5100	4760	4420	4080	3740	3400	3060	2720	2313	2040	1700	1380	1020	680	340	98	61200
5150	4807	4463	4120	3777	3433	3090	2747	2333	2060	1717	1393	1030	687			

0 Hours.

 $\frac{1}{2}$ Log. Haversines. (c)

0 Hours.

10 ^m	11 ^m	12 ^m	13 ^m	14 ^m	15 ^m	16 ^m	17 ^m	18 ^m	19 ^m	
2 deg.		3 deg.				4 deg.				
30'	45'	0'	15'	30'	45'	0'	15'	30'	45'	deg.
3338753	3380138	3417919	3452672	3484848	3514801	3542819	3569137	3593948	3617417	60
339476	380796	418521	453229	485364	515283	543271	569562	594350	617797	59
340198	381452	419123	453784	485880	515765	543723	569987	594751	618177	58
340918	382107	419724	454339	486395	516246	544173	570411	595152	618557	57
31'	46'	1'	16'	31'	46'	1'	16'	31'	46'	
3341638	382762	3420324	3454893	3486910	3516726	3544624	3570836	3595553	3618937	56
342356	383415	420924	455447	487424	517206	545074	571259	595953	619316	55
343074	384068	421522	456000	487938	517686	545524	571883	596353	619695	54
343789	384719	422120	456551	488451	518164	545973	572105	596752	620073	53
32'	47'	2'	17'	32'	47'	2'	17'	32'	47'	
3344504	385370	3422717	3457103	3488963	3518643	3546422	3572528	3597152	3620452	52
345218	386019	423313	457653	489475	519121	546870	572950	597550	620830	51
345930	386668	423908	458203	489986	519598	547318	573372	597949	621207	50
346640	387315	424502	458752	490496	520075	547760	573793	598347	621584	49
33'	48'	3'	18'	33'	48'	3'	18'	33'	48'	
3347355	387962	3425096	3459301	3491006	3520551	3548212	3574214	3598745	3621962	48
348060	388608	425688	459849	491515	521027	548658	574634	599142	622338	47
348768	389253	426281	460396	492024	521502	549104	575054	599539	622714	46
349475	389896	426871	460943	492532	521977	549550	575484	599935	623090	45
34'	49'	4'	19'	34'	49'	4'	19'	34'	49'	
3350180	3890539	3427462	3461489	3493040	3522451	3549995	3575893	3600323	3623466	44
350885	391181	428051	462033	493546	522925	550439	576312	600727	623841	43
351588	391822	428640	462578	494053	523398	550883	576730	601123	624216	42
352290	392462	429228	463122	494558	523871	551327	577148	601518	624591	41
35'	50'	5'	20'	35'	50'	5'	20'	35'	50'	
3352991	393101	3429815	3463665	3495064	3524343	3551770	3577566	3601913	3624965	40
353691	393739	430402	464207	495568	524814	552213	577983	602307	625339	39
354389	394376	430987	464749	496072	525286	552655	578400	602701	625713	38
355087	395012	431572	465290	496575	525756	553097	578816	603095	626086	37
36'	51'	6'	21'	36'	51'	6'	21'	36'	51'	
3355781	395647	3432156	3465830	3497078	3526226	3553539	3579232	3603489	3626459	36
356478	396282	432739	466370	497580	526696	553979	579648	603881	626832	35
357173	396915	433322	466909	498082	527165	554420	580063	604274	627205	34
357866	397547	433903	467447	498583	527633	554860	580478	604666	627576	33
37'	52'	7'	22'	37'	52'	7'	22'	37'	52'	
3358558	398179	3434484	3467985	3499084	3528102	3555300	3580892	3605058	3627948	32
359249	398810	435064	468522	499583	528569	555739	581306	605450	628320	31
359939	399440	435644	469058	500083	529036	556177	581720	605841	628691	30
360627	400068	436222	469594	500581	529503	556616	582133	606232	629062	29
38'	53'	8'	23'	38'	53'	8'	23'	38'	53'	
3361315	400696	3436800	3470129	3501080	3529969	3557054	3582546	3606623	3629432	28
362001	401323	437377	470663	501577	530434	557491	582958	607012	629802	27
362687	401949	437953	471197	502074	530899	557928	583370	607403	630172	26
363371	402574	438528	471730	502571	531364	558364	583782	607792	630542	25
39'	54'	9'	24'	39'	54'	9'	24'	39'	54'	
3364054	403199	3439103	3472263	3503067	3531828	3558800	3584193	3608181	3630911	24
364736	403822	439677	472794	503562	532291	559236	584604	608570	631280	23
365418	404445	440250	473325	504057	532755	559671	585015	608958	631649	22
366098	405066	440822	473856	504551	533217	560106	585424	609346	632017	21
40'	55'	10'	25'	40'	55'	10'	25'	40'	55'	
3366777	405687	3441394	3474386	3505045	3533679	3560540	3585834	3609734	3632385	20
367455	406307	441965	474914	505537	534141	560974	586244	610121	632752	19
368132	406926	442535	475443	506030	534602	561408	586653	610508	633120	18
368807	407544	443105	475971	506522	535062	561840	587061	610895	633487	17
41'	56'	11'	26'	41'	56'	11'	26'	41'	56'	
3369482	408161	3443674	3476498	3507014	3535523	3562273	3587469	3611281	3633854	16
370156	408777	444241	477025	507504	535982	562705	587877	611667	634220	15
370829	409393	444809	477551	507995	536442	563137	588285	612053	634586	14
371500	410007	445375	478076	508484	536900	563568	588691	612438	634952	13
42'	57'	12'	27'	42'	57'	12'	27'	42'	57'	
3372171	410621	3445941	3478601	3508974	3537358	3563999	3589098	3612823	3635317	12
372840	411234	445506	479125	509462	537816	564430	589504	613208	635282	11
373509	411846	446070	479648	509950	538273	564860	589910	613592	635648	10
374176	412457	446633	480171	510438	538730	565289	590316	613976	636012	9
43'	58'	13'	28'	43'	58'	13'	28'	43'	58'	
3374843	413068	3448196	3480693	3510925	3539186	3565719	3590721	3614360	3636776	8
375508	413678	446558	481214	511411	539642	566147	591255	614743	637140	7
376173	414286	447120	481736	511897	540097	566576	591530	615126	637504	6
376836	414893	447680	482256	512382	540552	567003	591934	615508	637867	5
44'	59'	14'	29'	44'	59'	14'	29'	44'	59'	
3377499	415500	3450440	3482775	3512867	3541007	3567431	3592338	3615891	3638230	4
378160	416106	448099	483294	513351	541460	567858	592741	616273	638593	3
378821	416711	448658	483813	513835	541914	568285	593144	616654	638956	2
379480	417315	449215	484330	514318	542366	568711	593546	617035	639317	1
380138	417919	3452672	3484848	3514801	3542819	3569137	3593948	3617417	3639680	0
49 ^m	48 ^m	47 ^m	46 ^m	45 ^m	44 ^m	43 ^m	42 ^m	41 ^m	40 ^m	deg.

22 Hours.

218

23 Hours.

	20 ^m	21 ^m	22 ^m	23 ^m	24 ^m	25 ^m	26 ^m	27 ^m	28 ^m
	5 deg.				6 deg.				7 deg.
0	0'	15'	30'	45'	0'	15'	30'	45'	0'
1	3.639680	3.660855	3.681043	3.700333	3.718800	3.736512	3.753528	3.769900	3.785675
15	640041	661199	681372	700647	719102	736801	753806	770167	785933
30	640402	661543	681700	700961	719402	737090	754084	770435	786191
45	640763	661887	682028	701275	719703	737379	754361	770702	786449
1	1'	16'	31'	46'	1'	16'	31'	46'	1'
4	3.641124	3.662230	3.682356	3.701589	3.720004	3.737667	3.754639	3.770970	3.786707
5	641484	662573	682684	701902	720304	737956	754916	771237	786964
6	641844	662916	683011	702215	720604	738244	755193	771504	787222
7	642204	663259	683338	702528	720904	738532	755470	771770	787479
8	2'	17'	32'	47'	2'	17'	32'	47'	2'
8	3.642563	3.663601	3.683665	3.702841	3.721204	3.738820	3.755747	3.772037	3.787736
9	642922	663943	683992	703153	721503	739107	756023	772303	787992
10	643281	664285	684318	703466	721803	739395	756300	772569	788249
11	643640	664627	684644	703778	722102	739682	756576	772835	788506
12	3'	18'	33'	48'	3'	18'	33'	48'	3'
12	3.643998	3.664968	3.684971	3.704090	3.722401	3.739969	3.756852	3.773101	3.788762
13	644356	665309	685296	704401	722700	740256	757123	773367	789018
14	644714	665650	685622	704713	722998	740543	757404	773633	789275
15	645071	665990	685947	705024	723297	740829	757679	773898	789531
16	4'	19'	34'	49'	4'	19'	34'	49'	4'
16	3.645428	3.666331	3.686272	3.705335	3.723595	3.741115	3.757955	3.774163	3.789787
17	645785	666671	686593	705645	723893	741401	758230	774428	790042
18	646141	667011	686921	705956	724190	741687	758505	774693	790298
19	646497	667350	687245	706266	724488	741973	758779	774958	790553
20	5'	20'	35'	50'	5'	20'	35'	50'	5'
20	3.646853	3.667689	3.687569	3.706577	3.724785	3.742259	3.759054	3.775223	3.790808
21	647209	668028	687893	706886	725082	742544	759329	775487	791063
22	647564	668367	688216	707196	725379	742829	759603	775751	791318
23	647919	668705	688539	707505	725676	743114	759877	776015	791573
24	6'	21'	36'	51'	6'	21'	36'	51'	6'
24	3.648274	3.669043	3.688862	3.707815	3.725972	3.743399	3.760151	3.776279	3.791828
25	648628	669381	689183	708123	726268	743683	760425	776547	792082
26	648983	669719	689508	708432	726564	743968	760699	776807	792337
27	649336	670056	689830	708740	726861	744252	760972	777070	792590
28	7'	22'	37'	52'	7'	22'	37'	52'	7'
28	3.649690	3.670393	3.690152	3.709049	3.727156	3.744536	3.761245	3.777333	3.792845
29	650043	670730	690474	709357	727452	744820	761518	777596	793098
30	650396	671067	690795	709665	727747	745103	761791	777859	793352
31	650749	671403	691117	709972	728042	745387	762064	778122	793606
32	8'	23'	38'	53'	8'	23'	38'	53'	8'
32	3.651102	3.671739	3.691438	3.710280	3.728337	3.745670	3.762337	3.778385	3.793859
33	651453	672074	691785	710587	728632	745953	762609	778647	794112
34	651806	672410	692079	710894	728926	746236	762881	778910	794366
35	652157	672745	692399	711201	729220	746519	763153	779172	794618
36	9'	24'	39'	54'	9'	24'	39'	54'	9'
36	3.652508	3.673080	3.692720	3.711507	3.729514	3.746801	3.763425	3.779434	3.794872
37	652859	673415	693039	711814	729808	747084	763697	779696	795124
38	653210	673750	693359	712120	730101	747366	763968	779958	795377
39	653560	674084	693679	712426	730395	747648	764240	780219	795629
40	10'	25'	40'	55'	10'	25'	40'	55'	10'
40	3.653911	3.674418	3.693998	3.712731	3.730688	3.747930	3.764511	3.780480	3.795881
41	654260	674751	694317	713037	730981	748211	764782	780741	796133
42	654610	675085	694636	713342	731274	748493	765053	781003	796385
43	654959	675418	694954	713647	731567	748774	765323	781263	796637
44	11'	26'	41'	56'	11'	26'	41'	56'	11'
44	3.655308	3.675751	3.695272	3.713952	3.731859	3.749055	3.765594	3.781524	3.796889
45	655657	676083	695590	714256	732152	749336	765864	781785	797140
46	656006	676416	695908	714561	732444	749617	766135	782045	797392
47	656354	676748	696226	714865	732736	749897	766405	782305	797643
48	12'	27'	42'	57'	12'	27'	42'	57'	12'
48	3.656702	3.677080	3.696543	3.715169	3.733027	3.750178	3.766675	3.782566	3.797894
49	657049	677412	696860	715473	733318	750458	766944	782826	798145
50	657397	677743	697177	715766	733610	750738	767214	783086	798396
51	657743	678074	697493	716080	733901	751017	767483	783345	798646
52	13'	28'	43'	58'	13'	28'	43'	58'	13'
52	3.658090	3.678405	3.697810	3.716383	3.734192	3.751297	3.767752	3.783605	3.798897
53	658437	678737	698126	716686	734482	751576	768021	783864	799147
54	658783	679066	698442	716988	734773	751856	768290	784123	799397
55	659129	679396	698758	717291	735063	752135	768559	784382	799647
56	14'	29'	44'	59'	14'	29'	44'	59'	14'
56	3.659475	3.679726	3.699073	3.717593	3.735353	3.752414	3.768827	3.784641	3.799897
57	659820	680056	699388	717895	735643	752692	769096	784900	800147
58	660165	680385	699704	718197	735933	752971	769364	785159	800397
59	660510	680714	700018	718498	736222	753249	769632	785417	800647
60	660855	681043	700333	718800	3.736512	3.753528	3.769900	3.785675	3.800896
30	39 ^m	38 ^m	37 ^m	36 ^m	35 ^m	34 ^m	33 ^m	32 ^m	31 ^m

0 Hours.

Log. Haversines. (1)

0 Hours.

30 ^m	31 ^m	32 ^m	33 ^m	34 ^m	35 ^m	36 ^m	37 ^m	38 ^m	39 ^m	
7 deg.		8 deg.				9 deg.				
30 ^m	45 ^m	0 ^m	15 ^m	30 ^m	45 ^m	0 ^m	15 ^m	30 ^m	45 ^m	60 ^m
3.815598	3.829818	3.843584	3.856926	3.869868	3.882433	3.894643	3.906517	3.918073	3.929328	60
815598	830051	843810	857145	870080	882639	894844	906712	918263	929513	59
816080	830284	844036	857364	870293	882846	895044	906908	918453	929698	58
816320	830517	844268	857582	870505	883052	895245	907102	918643	929883	57
31 ^m	46 ^m	1 ^m	16 ^m	31 ^m	46 ^m	1 ^m	16 ^m	31 ^m	46 ^m	56
3.816561	3.830749	3.844477	3.857801	3.870717	3.883258	3.895445	3.907297	3.918833	3.930068	56
816561	830982	844712	858019	870929	883464	895645	907492	919022	930252	55
816801	831214	844937	858238	871141	883670	895845	907687	919212	930437	54
817042	831447	845162	858456	871353	883875	896045	907881	919401	930622	53
817282										
32 ^m	47 ^m	2 ^m	17 ^m	32 ^m	47 ^m	2 ^m	17 ^m	32 ^m	47 ^m	52
3.817522	3.831679	3.845387	3.858674	3.871565	3.884081	3.896245	3.908076	3.919591	3.930806	52
817522	831911	845612	858892	871776	884287	896445	908271	919780	930991	51
817761	832145	845837	859110	871988	884492	896645	908471	919970	931175	50
818001	832373	846061	859328	872199	884698	896845	908659	920159	931359	49
818240										
33 ^m	48 ^m	3 ^m	18 ^m	33 ^m	48 ^m	3 ^m	18 ^m	33 ^m	48 ^m	48
3.818480	3.832607	3.846286	3.859546	3.872410	3.884903	3.897044	3.908853	3.920348	3.931544	48
818480	832838	846510	859763	872621	885108	897244	909042	920537	931728	47
818719	833070	846735	859981	872833	885313	897443	909242	920726	931912	46
818958	833301	846958	860198	873043	885518	897642	909435	920914	932096	45
819197										
34 ^m	49 ^m	4 ^m	19 ^m	34 ^m	49 ^m	4 ^m	19 ^m	34 ^m	49 ^m	44
3.819436	3.833532	3.847183	3.860415	3.873255	3.885723	3.897842	3.909629	3.921103	3.932280	44
819436	833763	847406	860632	873465	885928	898041	909823	921292	932464	43
819675	833994	847630	860849	873676	886133	898240	910017	921481	932648	42
819914	834225	847854	861066	873886	886337	898439	910210	921669	932831	41
820152										
35 ^m	50 ^m	5 ^m	20 ^m	35 ^m	50 ^m	5 ^m	20 ^m	35 ^m	50 ^m	40
3.820390	3.834456	3.848078	3.861283	3.874097	3.886542	3.898638	3.910404	3.921858	3.933015	40
820390	834686	848301	861500	874307	886746	898836	910597	922046	933198	39
820628	834917	848524	861717	874518	886950	899035	910791	922234	933382	38
820867	835147	848747	861933	874728	887154	899233	910984	922422	933565	37
821104										
36 ^m	51 ^m	6 ^m	21 ^m	36 ^m	51 ^m	6 ^m	21 ^m	36 ^m	51 ^m	36
3.821342	3.835377	3.848971	3.862149	3.874938	3.887359	3.899432	3.911177	3.922610	3.933749	36
821342	835607	849193	862365	875148	887563	899630	911370	922798	933932	35
821581	835837	849416	862582	875358	887767	899829	911563	922986	934115	34
821820	836067	849639	862798	875567	887970	900027	911756	923174	934298	33
822055										
37 ^m	52 ^m	7 ^m	22 ^m	37 ^m	52 ^m	7 ^m	22 ^m	37 ^m	52 ^m	32
3.822292	3.836297	3.849862	3.863014	3.875777	3.888174	3.900225	3.911949	3.923362	3.934481	32
822292	836526	850084	863229	875987	888378	900423	912141	923549	934664	31
822529	836756	850307	863445	876196	888581	900621	912334	923737	934847	30
822767	836985	850529	863661	876405	888785	900819	912526	923925	935029	29
823003										
38 ^m	53 ^m	8 ^m	23 ^m	38 ^m	53 ^m	8 ^m	23 ^m	38 ^m	53 ^m	28
3.823240	3.837215	3.850751	3.863877	3.876615	3.888988	3.901017	3.912719	3.924112	3.935212	28
823240	837443	850973	864092	876824	889191	901214	912912	924299	935395	27
823477	837673	851195	864307	877033	889395	901412	913104	924487	935577	26
823713	837901	851417	864522	877242	889597	901609	913296	924674	935760	25
823950										
39 ^m	54 ^m	9 ^m	24 ^m	39 ^m	54 ^m	9 ^m	24 ^m	39 ^m	54 ^m	24
3.824186	3.838130	3.851639	3.864738	3.877451	3.889801	3.901807	3.913488	3.924861	3.935942	24
824186	838359	851860	864952	877659	890003	902004	913680	925048	936124	23
824422	838587	852082	865167	877868	890206	902201	913872	925235	936307	22
824658	838816	852303	865382	878077	890409	902398	914064	925422	936489	21
824894										
40 ^m	55 ^m	10 ^m	25 ^m	40 ^m	55 ^m	10 ^m	25 ^m	40 ^m	55 ^m	20
3.825130	3.839044	3.852524	3.865597	3.878285	3.890612	3.902595	3.914256	3.925609	3.936671	20
825130	839272	852745	865811	878493	890814	902792	914447	925795	936853	19
825365	839500	852967	866026	878702	891016	902989	914639	925982	937035	18
825601	839728	853187	866240	878910	891218	903186	914830	926169	937216	17
825836										
41 ^m	56 ^m	11 ^m	26 ^m	41 ^m	56 ^m	11 ^m	26 ^m	41 ^m	56 ^m	16
3.826072	3.839956	3.853408	3.866454	3.879118	3.891421	3.903383	3.915022	3.926355	3.937398	16
826072	840183	853629	866668	879326	891623	903579	915213	926541	937580	15
826306	840411	853850	866883	879534	891825	903776	915404	926728	937762	14
826542	840638	854070	867096	879741	892027	903972	915595	926914	937943	13
826776										
42 ^m	57 ^m	12 ^m	27 ^m	42 ^m	57 ^m	12 ^m	27 ^m	42 ^m	57 ^m	12
3.827011	3.840866	3.854290	3.867310	3.879949	3.892229	3.904168	3.915787	3.927100	3.938125	12
827011	841093	854510	867524	880157	892430	904364	915978	927286	938306	11
827246	841320	854731	867738	880364	892632	904561	916169	927472	938487	10
827480	841547	854951	867951	880571	892833	904757	916359	927658	938668	9
827714										
43 ^m	58 ^m	13 ^m	28 ^m	43 ^m	58 ^m	13 ^m	28 ^m	43 ^m	58 ^m	8
3.827949	3.841773	3.855171	3.868165	3.880779	3.893035	3.904953	3.916550	3.927844	3.938850	8
827949	842001	855390	868378	880986	893236	905148	916741	928030	939030	7
828183	842227	855610	868591	881193	893438	905345	916932	928215	939212	6
828417	842454	855830	868804	881400	893639	905540	917122	928401	939392	5
828650										
44 ^m	59 ^m	14 ^m	29 ^m	44 ^m	59 ^m	14 ^m	29 ^m	44 ^m	59 ^m	4
3.828884	3.842680	3.856049	3.869017	3.881607	3.893840	3.905736	3.917312	3.928587	3.939573	4
828884	842906	856268	869230	881813	894041	905931	917503	928772	939754	3
829118	843133	856488	869443	882020	894242	906127	917693	928957	939935	2
829351	843358	856707	869655	882227	894442	906322	917883	929142	940115	1
829584										
45 ^m	60 ^m	15 ^m	30 ^m	45 ^m	60 ^m	15 ^m	30 ^m	45 ^m	60 ^m	0
3.829818	3.843584	3.856926	3.869868	3.882433	3.894643	3.906517	3.918073	3.929328	3.940296	0
829818	843810	857145	870080	882639	894844	906712	918263	929513	940296	

23 Hours.

23 Hours.

		40m	41m	42m	43m	44m	45m	46m	47m	48m	49m
		10 deg.				11 deg.				12 deg.	
SEC.	MIN.	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'
0	0	3.940296	3.950992	3.961429	3.971619	3.981573	3.991302	4.000816	4.010124	4.019235	4.02815
1	15	940476	951168	961600	971786	981737	991462	000972	010277	019385	02830
2	30	940657	951344	961772	971954	981901	991623	001129	010431	019535	02845
3	45	940837	951520	961944	972122	982064	991782	001286	010584	019685	02859
4	0	3.941017	3.951696	3.962116	3.972289	3.982228	3.991943	4.001443	4.010737	4.019835	4.02874
5	15	941197	951871	962287	972457	982392	992103	001599	010890	019985	02889
6	30	941378	952047	962459	972624	982556	992263	001756	011044	020135	02903
7	45	941557	952222	962630	972792	982719	992423	001912	011197	020285	02918
8	0	3.941738	3.952398	3.962801	3.972959	3.982883	3.992583	4.002069	4.011350	4.020435	4.02933
9	15	941917	952573	962972	973126	983046	992742	002225	011503	020584	02947
10	30	942097	952749	963144	973294	983210	992902	002381	011656	020734	02962
11	45	942277	952924	963315	973461	983373	993062	002537	011808	020884	02977
12	0	3.942456	3.953100	3.963486	3.973628	3.983536	3.993222	4.002694	4.011962	4.021034	4.02991
13	15	942636	953275	963657	973795	983699	993381	002850	012114	021183	03006
14	30	942816	953450	963828	973962	983863	993541	003006	012267	021335	03021
15	45	942995	953625	963999	974129	984026	993700	003162	012419	021482	03035
16	0	3.943174	3.953800	3.964170	3.974296	3.984189	3.993860	4.003318	4.012572	4.021632	4.03050
17	15	943353	953975	964340	974462	984352	994019	003473	012725	021781	03065
18	30	943533	954150	964511	974629	984515	994178	003630	012877	021930	03079
19	45	943712	954324	964681	974796	984677	994337	003785	013030	022080	03094
20	0	3.943891	3.954499	3.964852	3.974962	3.984840	3.994497	4.003941	4.013182	4.022229	4.03108
21	15	944070	954673	965022	975129	985003	994656	004096	013334	022378	03123
22	30	944249	954848	965193	975295	985166	994815	004252	013487	022527	03138
23	45	944427	955022	965363	975401	985328	994974	004408	013639	022676	03152
24	0	3.944606	3.955197	3.965534	3.975628	3.985491	3.995133	4.004563	4.013791	4.022825	4.0316
25	15	944785	955371	965704	975794	985653	995292	004719	013943	022974	0318
26	30	944963	955546	965874	975960	985816	995451	004874	014096	023123	0319
27	45	945142	955720	966044	976126	985978	995609	005029	014247	023272	032
28	0	3.945320	3.955894	3.966214	3.976293	3.986140	3.995768	4.005185	4.014400	4.023421	4.032
29	15	945499	956068	966384	976458	986303	995926	005340	014551	023569	032
30	30	945677	956242	966554	976624	986465	996085	005495	014703	023718	032
31	45	945855	956416	966723	976790	986627	996244	005650	014855	023867	032
32	0	3.946033	3.956590	3.966893	3.976956	3.986789	3.996402	4.005805	4.015007	4.024016	4.032
33	15	946211	956763	967063	977122	986951	996561	005960	015158	024164	032
34	30	946390	956932	967233	977288	987113	996719	006115	015310	024313	032
35	45	946567	957111	967402	977453	987275	996877	006270	015462	024461	032
36	0	3.946745	3.957284	3.967572	3.977619	3.987437	3.997036	4.006425	4.015613	4.024610	4.032
37	15	946923	957458	967741	977784	987598	997194	006579	015765	024758	032
38	30	947101	957631	967910	977950	987760	997352	006734	015916	024906	032
39	45	947278	957804	968079	978115	987922	997510	006889	016068	025054	032
40	0	3.947456	3.957978	3.968249	3.978280	3.988083	3.997668	4.007044	4.016219	4.025203	4.032
41	15	947633	958151	968418	978445	988245	997826	007198	016370	025351	032
42	30	947811	958324	968587	978611	988406	997984	007353	016522	025499	032
43	45	947988	958497	968756	978776	988567	998141	007507	016673	025647	032
44	0	3.948166	3.958670	3.968925	3.978941	3.988729	3.998299	4.007661	4.016824	4.025795	4.032
45	15	948342	958843	969093	979106	988890	998457	007816	016975	025943	032
46	30	948520	959016	969262	979271	989051	998615	007970	017126	026091	032
47	45	948697	959189	969431	979435	989212	998772	008124	017277	026238	032
48	0	3.948874	3.959361	3.969600	3.979600	3.989374	3.998930	4.008278	4.017422	4.026386	4.032
49	15	949051	959534	969768	979765	989534	999087	008432	017578	026534	032
50	30	949228	959707	969937	979930	989696	999245	008586	017729	026682	032
51	45	949404	959879	970105	980094	989856	999402	008740	017880	026829	032
52	0	3.949581	3.960052	3.970224	3.980259	3.990017	3.999559	4.008894	4.018031	4.026977	4.032
53	15	949757	960224	970441	980423	990178	999717	009048	018181	027124	032
54	30	949934	960393	970610	980588	990339	999874	009202	018332	027272	032
55	45	950110	960568	970778	980752	990499	4.000031	009356	018482	027419	032
56	0	3.950287	3.960741	3.970947	3.980916	3.990660	4.000188	4.009510	4.018633	4.027567	4.032
57	15	950463	960913	971115	981080	990821	000345	009663	018783	027714	032
58	30	950640	961085	971283	981245	990981	000502	009817	018934	027862	032
59	45	950816	961257	971451	981409	991141	000659	009970	019084	028009	032
60	0	3.950992	3.961429	3.971619	3.981573	3.991302	4.000816	4.010124	4.019235	4.02815	4.032
SEC.	MIN.	19m	18m	17m	16m	15m	14m	13m	12m	11m	10m

0 Hours.

 $\frac{1}{2}$ Log. Haversines. (t)

0 Hours.

		50 ^m	51 ^m	52 ^m	53 ^m	54 ^m	55 ^m	56 ^m	57 ^m	58 ^m	59 ^m	
		12 deg.		13 deg.				14 deg.				
0	1	4.036896	4.045461	4.053859	4.062095	4.070176	4.078107	4.085894	4.093542	4.101056	4.108439	60
		037040	045602	053997	062231	070309	078238	086023	093668	101180	108561	59
2	3	037184	045744	054136	062367	070443	078369	086152	093795	101304	108683	58
4	5	037328	045885	054274	062502	070576	078500	086280	093921	101428	108805	57
6	7	037472	046026	054413	062639	070709	078631	086409	094047	101552	108927	56
8	9	037616	046167	054551	062774	070842	078762	086537	094173	101676	109049	55
10	11	037760	046308	054689	062910	070976	078892	086665	094300	101800	109171	54
12	13	037904	046449	054828	063045	071109	079023	086794	094445	101924	109292	53
14	15	038048	046590	054966	063181	071242	079154	086932	094552	102048	109414	52
16	17	038191	046731	055104	063317	071375	079284	087050	094678	102171	109536	51
18	19	038335	046872	055242	063452	071508	079415	087179	094804	102295	109658	50
20	21	038479	047013	055380	063588	071641	079545	087307	094929	102419	109779	49
22	23	038623	047154	055519	063723	071774	079676	087435	095056	102543	109901	48
24	25	038766	047294	055657	063859	071907	079806	087563	095181	102660	110022	47
26	27	038910	047435	055795	063994	072040	079937	087691	095307	102780	110144	46
28	29	039053	047576	055932	064129	072172	080067	087819	095433	102913	110265	45
30	31	039197	047717	056071	064265	072305	080198	087947	095559	103037	110387	44
32	33	039340	047857	056208	064400	072438	080328	088075	095684	103161	110508	43
34	35	039483	047998	056346	064535	072571	080458	088203	095810	103284	110630	42
36	37	039626	048138	056484	064670	072703	080588	088331	095936	103408	110751	41
38	39	039770	048279	056622	064806	072836	080719	088459	096061	103531	110873	40
40	41	039913	048419	056759	064941	072968	080849	088587	096187	103654	110994	39
42	43	040056	048559	056897	065076	073101	080979	088715	096313	103778	111115	38
44	45	040199	048699	057034	065211	073234	081109	088842	096438	103901	111236	37
46	47	040342	048840	057172	065346	073366	081239	088970	096564	104025	111358	36
48	49	040485	048980	057310	065480	073498	081369	089097	096689	104148	111478	35
50	51	040628	049120	057447	065616	073631	081499	089225	096814	104271	111600	34
52	53	040771	049260	057584	065750	073763	081629	089353	096939	104394	111721	33
54	55	040914	049400	057722	065885	073896	081759	089480	097065	104517	111842	32
56	57	041057	049540	057859	066020	074028	081889	089608	097190	104640	111963	31
58	59	041200	049680	057997	066155	074160	082019	089735	097316	104764	112084	30
60	1	041342	049820	058134	066289	074292	082148	089863	097440	104886	112205	29
2	3	041485	049960	058271	066424	074424	082278	089990	097566	105010	112326	28
4	5	041628	050100	058408	066558	074556	082408	090117	097691	105133	112446	27
6	7	041770	050240	058545	066693	074688	082537	090245	097816	105255	112568	26
8	9	041913	050379	058682	066827	074820	082667	090372	097941	105378	112688	25
10	11	042055	050519	058819	066962	074952	082797	090500	098066	105501	112809	24
12	13	042198	050659	058956	067096	075084	082926	090627	098191	105624	112930	23
14	15	042340	050799	059093	067231	075216	083056	090754	098316	105747	113051	22
16	17	042482	050938	059230	067365	075348	083185	090881	098441	105869	113171	21
18	19	042625	051078	059367	067499	075480	083314	091008	098566	105992	113292	20
20	21	042767	051217	059504	067633	075611	083444	091135	098691	106115	113412	19
22	23	042909	051357	059641	067768	075743	083573	091262	098816	106238	113533	18
24	25	043051	051496	059777	067902	075875	083702	091389	098940	106360	113653	17
26	27	043194	051635	059914	068036	076007	083832	091516	099065	106483	113774	16
28	29	043335	051774	060051	068170	076138	083961	091643	099190	106605	113894	15
30	31	043478	051914	060187	068304	076270	084090	091770	099314	106728	114015	14
32	33	043619	052053	060324	068438	076401	084219	091897	099439	106850	114135	13
34	35	043762	052192	060460	068572	076533	084348	092024	099564	106973	114256	12
36	37	043903	052331	060597	068706	076664	084477	092150	099688	107095	114377	11
38	39	044045	052470	060733	068840	076796	084606	092277	099813	107218	114496	10
40	41	044187	052609	060869	068973	076927	084735	092404	099937	107340	114617	9
42	43	044329	052748	061006	069107	077058	084864	092530	100062	107462	114737	8
44	45	044470	052887	061142	069241	077189	084993	092657	100186	107584	114857	7
46	47	044612	053026	061278	069375	077321	085122	092784	100310	107707	114977	6
48	49	044754	053165	061414	069508	077452	085251	092910	100434	107829	115096	5
50	51	044895	053304	061551	069642	077583	085380	093037	100559	107951	115218	4
52	53	045037	053442	061687	069775	077714	085508	093163	100683	108073	115337	3
54	55	045178	053581	061823	069909	077845	085637	093290	100807	108195	115458	2
56	57	045319	053720	061959	070042	077976	085766	093416	100931	108317	115577	1
58	59	045461	053859	062095	070176	078107	085894	093542	101056	108439	115698	0
60	1	045602	054000	062231	070309	078238	086023	093668	101180	108561	115819	0

22 Hours.

220

23 Hours.

1 Hour.

 $\frac{1}{2}$ Log. Havermaea. (t)

1 Hour.

		0 ^m	4 ^m	8 ^m	12 ^m	16 ^m	20 ^m	24 ^m	28 ^m	32 ^m		
Time	Are	15°	16°	17°	18°	19°	20°	21°	22°	23°	Time	m
0 0	0	4.115698	4.143555	4.169702	4.194332	4.217609	4.239670	4.260633	4.280599	4.299655	0 2	3
0 2	0	4.115937	4.143780	4.169913	4.194532	4.217798	4.239849	4.260803	4.280761	4.299810	0 4	1
0 4	0	4.116177	4.144004	4.170124	4.194731	4.217986	4.240028	4.260974	4.280924	4.299966	0 6	1
0 6	1	4.116417	4.144229	4.170336	4.194930	4.218175	4.240207	4.261144	4.281086	4.300121	0 8	1
0 8	2	4.116656	4.144453	4.170546	4.195129	4.218363	4.240386	4.261314	4.281248	4.300276	0 10	1
0 10	2	4.116895	4.144677	4.170757	4.195328	4.218552	4.240565	4.261484	4.281410	4.300431	0 12	1
0 12	3	4.117135	4.144901	4.170968	4.195527	4.218740	4.240744	4.261654	4.281573	4.300586	0 14	1
0 14	3	4.117374	4.145125	4.171179	4.195726	4.218928	4.240922	4.261824	4.281735	4.300740	0 16	1
0 16	4	4.117612	4.145349	4.171389	4.195925	4.219116	4.241101	4.261994	4.281897	4.300895	0 18	1
0 18	4	4.117851	4.145573	4.171600	4.196123	4.219304	4.241279	4.262164	4.282059	4.301050	0 20	1
0 20	5	4.118090	4.145797	4.171810	4.196322	4.219492	4.241458	4.262334	4.282220	4.301205	0 22	1
0 22	5	4.118328	4.146020	4.172020	4.196520	4.219680	4.241636	4.262503	4.282382	4.301359	0 24	1
0 24	6	4.118567	4.146243	4.172230	4.196719	4.219868	4.241814	4.262673	4.282544	4.301514	0 26	1
0 26	6	4.118805	4.146467	4.172440	4.196917	4.220056	4.241992	4.262842	4.282706	4.301668	0 28	1
0 28	7	4.119043	4.146690	4.172650	4.197115	4.220243	4.242170	4.263012	4.282867	4.301823	0 30	1
0 30	7	4.119281	4.146913	4.172860	4.197313	4.220431	4.242348	4.263181	4.283029	4.301977	0 32	1
0 32	8	4.119519	4.147136	4.173070	4.197511	4.220618	4.242526	4.263351	4.283190	4.302132	0 34	1
0 34	8	4.119756	4.147359	4.173279	4.197709	4.220805	4.242704	4.263520	4.283352	4.302286	0 36	1
0 36	9	4.119994	4.147581	4.173489	4.197907	4.220993	4.242882	4.263689	4.283513	4.302440	0 38	1
0 38	9	4.120231	4.147804	4.173698	4.198104	4.221180	4.243060	4.263858	4.283675	4.302594	0 40	1
0 40	10	4.120469	4.148026	4.173908	4.198302	4.221367	4.243237	4.264027	4.283836	4.302748	0 42	1
0 42	10	4.120706	4.148248	4.174117	4.198499	4.221554	4.243415	4.264196	4.283997	4.302903	0 44	1
0 44	11	4.120943	4.148471	4.174326	4.198697	4.221741	4.243592	4.264365	4.284158	4.303057	0 46	1
0 46	11	4.121180	4.148693	4.174535	4.198894	4.221928	4.243770	4.264534	4.284319	4.303210	0 48	1
0 48	12	4.121417	4.148915	4.174744	4.199091	4.222115	4.243947	4.264703	4.284480	4.303364	0 50	1
0 50	12	4.121653	4.149137	4.174953	4.199288	4.222301	4.244124	4.264872	4.284641	4.303518	0 52	1
0 52	13	4.121890	4.149358	4.175161	4.199485	4.222488	4.244302	4.265040	4.284802	4.303672	0 54	1
0 54	13	4.122126	4.149580	4.175370	4.199682	4.222674	4.244479	4.265209	4.284963	4.303826	0 56	1
0 56	14	4.122362	4.149801	4.175578	4.199879	4.222861	4.244656	4.265377	4.285124	4.303979	0 58	1
0 58	14	4.122598	4.150023	4.175787	4.200076	4.223047	4.244833	4.265546	4.285284	4.304133	0 15	0
0 15	0	4.122834	4.150244	4.175995	4.200273	4.223234	4.245010	4.265714	4.285445	4.304286	0 17	0
0 17	0	4.123070	4.150465	4.176203	4.200469	4.223420	4.245186	4.265883	4.285606	4.304440	0 19	0
0 19	0	4.123306	4.150686	4.176411	4.200666	4.223606	4.245363	4.266051	4.285766	4.304593	0 21	0
0 21	0	4.123542	4.150907	4.176619	4.200862	4.223792	4.245540	4.266219	4.285927	4.304747	0 23	0
0 23	0	4.123777	4.151128	4.176827	4.201059	4.223978	4.245716	4.266387	4.286088	4.304900	0 25	0
0 25	0	4.124012	4.151349	4.177035	4.201255	4.224164	4.245893	4.266555	4.286247	4.305053	0 27	0
0 27	0	4.124248	4.151569	4.177242	4.201451	4.224349	4.246069	4.266723	4.286408	4.305207	0 29	0
0 29	0	4.124483	4.151790	4.177450	4.201647	4.224535	4.246246	4.266891	4.286568	4.305360	0 31	0
0 31	0	4.124718	4.152010	4.177657	4.201843	4.224721	4.246422	4.267059	4.286728	4.305513	0 33	0
0 33	0	4.124952	4.152230	4.177865	4.202039	4.224906	4.246598	4.267227	4.286888	4.305666	0 35	0
0 35	0	4.125187	4.152451	4.178072	4.202234	4.225092	4.246775	4.267394	4.287048	4.305819	0 37	0
0 37	0	4.125422	4.152671	4.178279	4.202430	4.225277	4.246951	4.267562	4.287208	4.305972	0 39	0
0 39	0	4.125656	4.152891	4.178486	4.202626	4.225462	4.247127	4.267730	4.287368	4.306125	0 41	0
0 41	0	4.125890	4.153110	4.178693	4.202821	4.225648	4.247303	4.267897	4.287528	4.306277	0 43	0
0 43	0	4.126125	4.153330	4.178900	4.203017	4.225833	4.247478	4.268065	4.287687	4.306430	0 45	0
0 45	0	4.126359	4.153550	4.179107	4.203212	4.226018	4.247654	4.268232	4.287847	4.306583	0 47	0
0 47	0	4.126593	4.153769	4.179313	4.203407	4.226203	4.247830	4.268399	4.288007	4.306736	0 49	0
0 49	0	4.126826	4.153988	4.179520	4.203602	4.226388	4.248006	4.268567	4.288166	4.306888	0 51	0
0 51	0	4.127060	4.154208	4.179726	4.203797	4.226572	4.248181	4.268734	4.288326	4.307041	0 53	0
0 53	0	4.127294	4.154427	4.179933	4.203992	4.226757	4.248357	4.268901	4.288485	4.307193	0 55	0
0 55	0	4.127527	4.154646	4.180139	4.204187	4.226942	4.248532	4.269068	4.288645	4.307346	0 57	0
0 57	0	4.127760	4.154865	4.180345	4.204382	4.227126	4.248707	4.269235	4.288804	4.307498	0 59	0
0 59	0	4.127993	4.155083	4.180551	4.204577	4.227311	4.248883	4.269402	4.288964	4.307650	0 10	0
0 10	0	4.128226	4.155302	4.180757	4.204771	4.227495	4.249058	4.269569	4.289123	4.307803	0 12	0
0 12	0	4.128459	4.155521	4.180963	4.204966	4.227680	4.249233	4.269735	4.289282	4.307955	0 14	0
0 14	0	4.128692	4.155739	4.181169	4.205160	4.227864	4.249408	4.269902	4.289441	4.308107	0 16	0
0 16	0	4.128925	4.155957	4.181374	4.205354	4.228048	4.249583	4.270069	4.289600	4.308259	0 18	0
0 18	0	4.129157	4.156176	4.181580	4.205549	4.228232	4.249758	4.270235	4.289759	4.308411	0 20	0
0 20	0	4.129390	4.156394	4.181785	4.205743	4.228416	4.249933	4.270402	4.289918	4.308563	0 22	0
0 22	0	4.129622	4.156612	4.181991	4.205937	4.228600	4.250107	4.270568	4.290077	4.308715	0 24	0
0 24	0	4.129854	4.156830	4.182196	4.206131	4.228784	4.250282	4.270735	4.290236	4.308867	0 26	0
0 26	0	4.130086	4.157048	4.182401	4.206325	4.228968	4.250457	4.270901	4.290401	4.309021	0 28	0
0 28	0	4.130318	4.157266	4.182606	4.206519	4.229152	4.250632	4.271067	4.290566	4.309176	0 30	0
0 30	0	4.130550	4.157484	4.182811	4.206713	4.229336	4.250807	4.271232	4.290731	4.309331	0 32	0
0 32	0	4.130782	4.157702	4.183016	4.206907	4.229520	4.250982	4.271397	4.290896	4.309486	0 34	0
0 34	0	4.131014	4.157920	4.183221	4.207101	4.229704	4.251157	4.271562	4.291061	4.309641	0 36	0
0 36	0	4.131246	4.158138	4.183426	4.207295	4.229888	4.251332	4.271727	4.291226	4.309796	0 38	0
0 38	0	4.131478	4.158356	4.183631	4.207489	4.230072	4.251507	4.271892	4.291391	4.309951	0 40	0
0 40	0	4.131710	4.158574	4.183836	4.207683	4.230256	4.251682	4.272057	4.291556	4.310106	0 42	0
0 42	0	4.131942	4.158792	4.184041	4.207877	4.230440	4.251857	4.272222	4.291721	4.310261	0 44	0
0 44	0	4.132174	4.159010	4.184246	4.208071	4.230624	4.252032	4.272387	4.291886	4.310416	0 46	0
0 46	0	4.132406	4.159228	4.184451	4.208265	4.230808	4.252207	4.272552	4.292051	4.310571	0 48	0
0 48	0	4.132638	4.159446	4.184656	4.208459	4.230992	4.252382	4.272717	4.292216	4.310726	0 50	0
0 50	0	4.132870	4.159664	4.184861	4.208653	4.231176	4.252557	4.272882	4.292381	4.310881	0 52	0
0 52	0	4.133102	4.159882	4.185066	4.208847	4.231360	4.252732	4.273047	4.292546	4.311036	0 54	0
0 54	0	4.133334	4.160100	4.185271	4.209041	4.231544	4.252907	4.273212	4.292711	4.311191	0 56	0
0 56	0	4.133566	4.160318	4.185476	4.209235	4.231728	4.253082	4.273377	4.292876	4.311346	0 58	0
0 58	0	4.133798	4.160536	4.185681	4.209429	4.231912	4.253257	4.273542	4.293041	4.311501	0 10	0
0 10	0	4.134030	4.160754	4.185886	4.209623	4.232096	4.253432	4.273707	4.293206	4.311656		

1 Hour.

Log. Haversmes. (6)

1 Hour.

		2 ^m	6 ^m	10 ^m	14 ^m	18 ^m	22 ^m	26 ^m	30 ^m	34 ^m		
Time	Arc.	15° 30'	16° 30'	17° 30'	18° 30'	19° 30'	20° 30'	21° 30'	22° 30'	23° 30'	Time	Arc.
0 0 30	0	4.129854	4.156830	4.182196	4.206131	4.228784	4.250282	4.270735	4.290236	4.308867	0 1 30	1
0 2 30	0	130086	157047	182401	206325	228968	250457	270901	290394	309019	0 3 30	3
0 4 31	0	130318	157265	182606	206519	229151	250631	271067	290553	309170	0 5 31	5
0 6 31	0	130550	157482	182811	206712	229335	250806	271234	290712	309322	0 7 31	7
0 8 32	0	4.130781	4.157700	4.183016	4.206906	4.229518	4.250980	4.271400	4.290870	4.309474	0 9 32	9
0 10 32	0	131013	157917	183221	207099	229702	251155	271566	291029	309625	0 11 32	11
0 12 33	0	131244	158134	183425	207293	229885	251329	271732	291187	309777	0 13 33	13
0 14 33	0	131475	158352	183630	207486	230069	251503	271898	291346	309928	0 15 33	15
0 16 34	0	4.131706	4.158569	4.183834	4.207679	4.230252	4.251677	4.272063	4.291504	4.310080	0 17 34	17
0 18 34	0	131937	158785	184039	207873	230435	251851	272229	291662	310231	0 19 34	19
0 20 35	0	132168	159002	184243	208066	230618	252025	272395	291820	310382	0 21 35	21
0 22 35	0	132399	159219	184447	208259	230801	252199	272561	291979	310534	0 23 35	23
0 24 36	0	4.132630	4.159435	4.184651	4.208452	4.230984	4.252373	4.272726	4.292137	4.310685	0 25 36	25
0 26 36	0	132860	159652	184855	208644	231167	252547	272892	292297	310836	0 27 36	27
0 28 37	0	133091	159868	185059	208837	231349	252720	273057	292453	310987	0 29 37	29
0 30 37	0	133321	160084	185263	209030	231532	252894	273223	292611	311138	0 31 37	31
0 32 38	0	4.133551	4.160300	4.185466	4.209222	4.231714	4.253067	4.273388	4.292768	4.311289	0 33 38	33
0 34 38	0	133781	160516	185670	209415	231897	253241	273553	292926	311440	0 35 38	35
0 36 39	0	134011	160732	185873	209607	232079	253414	273718	293084	311591	0 37 39	37
0 38 39	0	134241	160948	186077	209799	232262	253588	273884	293242	311742	0 39 39	39
0 40 40	0	4.134470	4.161164	4.186280	4.209992	4.232444	4.253761	4.274049	4.293399	4.311893	0 41 40	41
0 42 40	0	134700	161379	186483	210184	232626	253934	274214	293557	312043	0 43 40	43
0 44 41	0	134929	161595	186686	210376	232808	254107	274379	293714	312194	0 45 41	45
0 46 41	0	135158	161810	186889	210568	232990	254280	274543	293872	312345	0 47 41	47
0 48 42	0	4.135387	4.162025	4.187092	4.210760	4.233172	4.254453	4.274708	4.294029	4.312495	0 49 42	49
0 50 42	0	135616	162241	187295	210951	233354	254626	274873	294186	312646	0 51 42	51
0 52 43	0	135845	162456	187498	211143	233536	254799	275038	294344	312796	0 53 43	53
0 54 43	0	136074	162670	187700	211335	233718	254972	275202	294501	312946	0 55 43	55
0 56 44	0	4.136303	4.162885	4.187903	4.211526	4.233899	4.255144	4.275367	4.294658	4.313097	0 57 44	57
0 58 44	0	136531	163100	188105	211718	234081	255317	275531	294815	313247	0 59 44	59
0 59 45	0	136760	163315	188308	211909	234262	255489	275696	294972	313397	1 0 45	0
1 0 45	0	136988	163529	188510	212100	234444	255662	275860	295129	313547	1 1 45	1
1 2 46	0	4.137216	4.163743	4.188712	4.212291	4.234625	4.255834	4.276024	4.295286	4.313698	1 3 46	3
1 4 46	0	137444	163958	188914	212482	234806	256007	276189	295443	313848	1 5 46	5
1 6 47	0	137672	164172	189116	212673	234987	256179	276353	295600	313998	1 7 47	7
1 8 47	0	137900	164386	189318	212864	235168	256351	276517	295756	314148	1 9 47	9
1 10 48	0	4.138127	4.164600	4.189519	4.213055	4.235349	4.256523	4.276681	4.295912	4.314297	1 11 48	11
1 12 48	0	138355	164814	189721	213246	235530	256695	276845	296070	314447	1 13 48	13
1 14 49	0	138582	165027	189923	213437	235711	256867	277009	296226	314597	1 15 49	15
1 16 49	0	138810	165241	190124	213627	235892	257039	277173	296383	314747	1 17 49	17
1 18 50	0	4.139037	4.165454	4.190325	4.213818	4.236073	4.257211	4.277337	4.296539	4.314896	1 19 50	19
1 20 50	0	139264	165668	190527	214008	236253	257383	277500	296695	315046	1 21 50	21
1 22 51	0	139491	165881	190728	214198	236434	257554	277664	296852	315196	1 23 51	23
1 24 51	0	139718	166094	190929	214389	236614	257726	277827	297008	315345	1 25 51	25
1 26 52	0	4.139944	4.166307	4.191130	4.214579	4.236795	4.257898	4.277991	4.297164	4.315495	1 27 52	27
1 28 52	0	140171	166520	191331	214769	236975	258069	278154	297320	315644	1 29 52	29
1 30 53	0	140397	166733	191531	214959	237155	258241	278318	297476	315793	1 31 53	31
1 32 53	0	140624	166946	191732	215149	237335	258412	278481	297632	315943	1 33 53	33
1 34 54	0	4.140850	4.167159	4.191933	4.215338	4.237515	4.258583	4.278644	4.297788	4.316092	1 35 54	35
1 36 54	0	141076	167371	192133	215528	237695	258754	278808	297944	316241	1 37 54	37
1 38 55	0	141302	167584	192334	215718	237875	258925	278971	298100	316390	1 39 55	39
1 40 55	0	141528	167796	192534	215907	238055	259097	279134	298256	316539	1 41 55	41
1 42 56	0	4.141754	4.168008	4.192734	4.216097	4.238235	4.259268	4.279297	4.298412	4.316688	1 43 56	43
1 44 56	0	141979	168220	192934	216286	238415	259438	279460	298567	316837	1 45 56	45
1 46 57	0	142205	168432	193134	216475	238594	259609	279623	298723	316986	1 47 57	47
1 48 57	0	142430	168644	193334	216664	238774	259780	279786	298878	317135	1 49 57	49
1 50 58	0	4.142655	4.168856	4.193534	4.216854	4.238953	4.259951	4.279948	4.299034	4.317284	1 51 58	51
1 52 58	0	142881	169068	193734	217043	239132	260121	280111	299189	317433	1 53 58	53
1 54 59	0	143106	169279	193933	217232	239312	260292	280274	299345	317582	1 55 59	55
1 56 59	0	143330	169491	194133	217420	239491	260463	280436	299500	317730	1 57 59	57
1 58 59	0	4.143555	4.169702	4.194332	4.217609	4.239670	4.260633	4.280599	4.299655	4.317879	1 59 59	59
2 0 00	0	143555	169702	194332	217609	239670	260633	280599	299655	317879	2 0 00	0
Time		56 ^m	52 ^m	48 ^m	44 ^m	40 ^m	36 ^m	32 ^m	28 ^m	24 ^m	Time	

22 Hours.

221

22 Hours.

1 Hour.

† Log. Haversines. (1)

2 Hours.

Time m	Arc. "	36"	40"	44"	48"	52"	56"	2° 0'	4"	8"	Time m
		24°	25°	26°	27°	28°	29°	30°	31°	32°	
0	0	4.317879	4.335337	4.352088	4.368185	4.383675	4.398600	4.412996	4.426899	4.440338	0
1	0	318027	335479	352225	368317	383802	398722	413114	427013	440448	1
2	0	318176	335622	352361	368448	383928	398844	413232	427126	440558	2
3	0	318324	335764	352498	368580	384055	398966	413350	427240	440668	3
4	0	318473	335906	352635	368711	384181	399088	413467	427354	440778	4
5	0	318621	336048	352771	368842	384308	399210	413585	427468	440888	5
6	0	318769	336191	352908	368974	384434	399332	413703	427581	440998	6
7	0	318918	336333	353044	369105	384561	399454	413821	427695	441108	7
8	0	319066	336475	353181	369236	384687	399575	413938	427809	441218	8
9	0	319214	336617	353317	369367	384814	399697	414056	427922	441328	9
10	0	319362	336759	353454	369499	384940	399819	414173	428036	441438	10
11	0	319510	336901	353590	369630	385066	399941	414291	428150	441548	11
12	0	319658	337043	353726	369761	385192	400062	414408	428263	441658	12
13	0	319806	337185	353863	369892	385319	400184	414526	428377	441767	13
14	0	319954	337326	353999	370023	385445	400306	414643	428490	441877	14
15	0	320102	337468	354135	370154	385571	400427	414760	428603	441987	15
16	0	320249	337610	354271	370285	385697	400549	414878	428717	442096	16
17	0	320397	337751	354407	370416	385823	400670	414995	428830	442206	17
18	0	320545	337893	354543	370546	385949	400792	415112	428943	442316	18
19	0	320692	338035	354679	370677	386075	400913	415230	429057	442425	19
20	0	320840	338176	354815	370808	386201	401035	415347	429170	442535	20
21	0	320987	338318	354951	370939	386327	401156	415464	429283	442644	21
22	0	321135	338459	355087	371069	386452	401277	415581	429396	442754	22
23	0	321282	338600	355222	371200	386578	401399	415698	429510	442863	23
24	0	321430	338742	355358	371330	386704	401520	415815	429623	442973	24
25	0	321577	338883	355494	371461	386830	401641	415932	429736	443082	25
26	0	321724	339024	355630	371591	386955	401762	416049	429849	443192	26
27	0	321871	339165	355765	371722	387081	401884	416166	429962	443301	27
28	0	322019	339306	355901	371852	387207	402005	416283	430075	443410	28
29	0	322166	339448	356036	371983	387332	402126	416400	430188	443520	29
30	0	322313	339589	356172	372113	387458	402247	416517	430301	443629	30
31	0	322460	339730	356307	372243	387583	402368	416634	430414	443738	31
32	0	322607	339871	356443	372373	387709	402489	416751	430527	443847	32
33	0	322753	340011	356578	372504	387834	402610	416867	430640	443956	33
34	0	322900	340152	356713	372634	387959	402731	416984	430752	444065	34
35	0	323047	340293	356848	372764	388085	402852	417101	430865	444175	35
36	0	323194	340434	356984	372894	388210	402972	417217	430978	444284	36
37	0	323340	340574	357119	373024	388335	403093	417334	431091	444393	37
38	0	323487	340715	357254	373154	388461	403214	417451	431203	444502	38
39	0	323634	340856	357389	373284	388586	403335	417567	431316	444611	39
40	0	323780	340996	357524	373414	388711	403455	417684	431429	444720	40
41	0	323927	341137	357659	373544	388836	403576	417800	431541	444829	41
42	0	324073	341277	357794	373674	388961	403697	417917	431654	444938	42
43	0	324219	341418	357929	373803	389086	403817	418033	431766	445046	43
44	0	324366	341558	358064	373933	389211	403938	418149	431879	445155	44
45	0	324512	341698	358198	374063	389336	404058	418266	431991	445264	45
46	0	324658	341839	358333	374192	389461	404179	418382	432104	445373	46
47	0	324804	341979	358468	374322	389586	404299	418498	432216	445482	47
48	0	324950	342119	358603	374452	389711	404420	418615	432328	445590	48
49	0	325096	342259	358737	374581	389835	404540	418731	432441	445699	49
50	0	325242	342399	358872	374711	389960	404660	418847	432553	445808	50
51	0	325388	342539	359006	374840	390085	404781	418963	432665	445916	51
52	0	325534	342679	359141	374970	390210	404901	419079	432778	446025	52
53	0	325680	342819	359275	375099	390334	405021	419196	432890	446133	53
54	0	325826	342959	359410	375228	390459	405141	419312	433002	446242	54
55	0	325972	343099	359544	375358	390583	405261	419428	433114	446351	55
56	0	326117	343239	359678	375487	390708	405382	419544	433226	446459	56
57	0	326263	343378	359813	375616	390832	405502	419660	433338	446567	57
58	0	326409	343518	359947	375745	390957	405622	419775	433450	446676	58
59	0	326554	343658	360081	375874	391081	405742	419891	433563	446784	59
60	0	326700	343797	360215	376003	391206	405862	420007	433675	446893	60
22	0	22	18	14	10	6	2	58	54	50	22

22 Hours.

21 Hours.

1 Hour.

Log. Haversines. (6)

2 Hours.

		38 ^m	42 ^m	46 ^m	50 ^m	54 ^m	58 ^m	2 ^h 2 ^m	6 ^m	10 ^m		
Time	Arc.	24° 30'	25° 30'	26° 30'	27° 30'	28° 30'	29° 30'	30° 30'	31° 30'	32° 30'	Time	s m
0 0 30	0	4.326700	4.343797	4.360215	4.376003	4.391206	4.405862	4.420007	4.433675	4.446893	0 2	
0 2 30	0	326845	343937	360349	376132	391330	405982	420123	433786	447001	58	1
0 4 30	0	326990	344076	360483	376261	391454	406102	420239	433898	447109	56	1
0 6 30	0	327136	344216	360617	376390	391579	406221	420355	434010	447218	54	1
0 8 30	0	327281	4.344355	4.360751	4.376519	4.391703	4.406341	4.420470	4.434122	4.447326	52	1
0 10 30	0	327426	344495	360885	376648	391827	406461	420586	434234	447434	50	1
0 12 30	0	327571	344634	361019	376777	391951	406581	420702	434346	447542	48	1
0 14 30	0	327717	344773	361153	376906	392075	406701	420817	434458	447650	46	1
0 16 30	0	327862	4.344912	4.361287	4.377035	4.392199	4.406820	4.420933	4.434569	4.447759	44	1
0 18 30	0	328007	345052	361421	377163	392323	406940	421048	434681	447867	42	1
0 20 30	0	328152	345191	361554	377292	392447	407060	421164	434793	447975	40	1
0 22 30	0	328297	345330	361688	377421	392571	407179	421280	434904	448083	38	1
0 24 30	0	328442	4.345469	4.361822	4.377549	4.392695	4.407299	4.421395	4.435016	4.448191	36	1
0 26 30	0	328586	345608	361955	377678	392819	407416	421510	435128	448299	34	1
0 28 30	0	328731	345747	362089	377806	392943	407538	421626	435239	448407	32	1
0 30 30	0	328876	345886	362222	377935	393067	407657	421741	435351	448515	30	1
0 32 30	0	329021	4.346024	4.362356	4.378063	4.393190	4.407777	4.421857	4.435462	4.448623	28	1
0 34 30	0	329165	346163	362489	378192	393314	407896	421972	435574	448731	26	1
0 36 30	0	329310	346302	362623	378320	393438	408015	422087	435685	448838	24	1
0 38 30	0	329454	346441	362756	378448	393562	408135	422202	435797	448946	22	1
0 40 30	0	329599	4.346579	4.362889	4.378577	4.393685	4.408254	4.422318	4.435908	4.449054	20	1
0 42 30	0	329743	346718	363022	378705	393809	408373	422433	436019	449162	18	1
0 44 30	0	329887	346857	363156	378833	393932	408492	422548	436131	449269	16	1
0 46 30	0	330032	346995	363289	378961	394056	408611	422663	436242	449377	14	1
0 48 30	0	330176	4.347134	4.363422	4.379089	4.394179	4.408731	4.422778	4.436353	4.449485	12	1
0 50 30	0	330320	347272	363555	379217	394303	408850	422893	436464	449592	10	1
0 52 30	0	330464	347410	363688	379345	394426	408969	423008	436576	449700	8	1
0 54 30	0	330609	347549	363821	379473	394550	409088	423123	436687	449808	6	1
0 56 30	0	330753	4.347687	4.363954	4.379601	4.394673	4.409207	4.423238	4.436798	4.449915	4	1
0 58 30	0	330897	347825	364087	379729	394796	409326	423353	436909	450023	2	1
1 0 30	0	331041	347963	364220	379857	394919	409445	423468	437020	450130	0	1
1 2 30	0	331185	348102	364352	379985	395043	409563	423583	437131	450238	58	0
1 4 30	0	331328	4.348240	4.364485	4.380113	4.395166	4.409682	4.423697	4.437242	4.450345	56	0
1 6 30	0	331472	348378	364618	380241	395289	409801	423812	437353	450453	54	0
1 8 30	0	331616	348516	364751	380368	395412	409920	423927	437464	450560	52	0
1 10 30	0	331760	348654	364883	380496	395535	410039	424042	437575	450667	50	0
1 12 30	0	331903	4.348792	4.365016	4.380624	4.395658	4.410157	4.424156	4.437686	4.450775	48	0
1 14 30	0	332047	348930	365148	380751	395781	410276	424271	437797	450882	46	0
1 16 30	0	332191	349067	365281	380879	395904	410395	424386	437908	450989	44	0
1 18 30	0	332334	349205	365413	381006	396027	410513	424500	438018	451096	42	0
1 20 30	0	332478	4.349343	4.365546	4.381134	4.396150	4.410632	4.424615	4.438129	4.451204	40	0
1 22 30	0	332621	349481	365678	381261	396273	410750	424729	438240	451311	38	0
1 24 30	0	332764	349618	365810	381389	396395	410869	424844	438351	451418	36	0
1 26 30	0	332908	349756	365943	381516	396518	410987	424958	438461	451525	34	0
1 28 30	0	333051	4.349893	4.366075	4.381643	4.396641	4.411106	4.425073	4.438572	4.451632	32	0
1 30 30	0	333194	350031	366207	381771	396764	411224	425187	438682	451739	30	0
1 32 30	0	333337	350168	366339	381898	396886	411343	425301	438793	451846	28	0
1 34 30	0	333481	350306	366471	382025	397009	411461	425416	438904	451953	26	0
1 36 30	0	333624	4.350443	4.366604	4.382152	4.397131	4.411579	4.425530	4.439014	4.452060	24	0
1 38 30	0	333767	350580	366736	382279	397254	411698	425644	439125	452167	22	0
1 40 30	0	333910	350718	366868	382406	397377	411816	425758	439235	452274	20	0
1 42 30	0	334053	350855	367000	382533	397499	411934	425873	439346	452381	18	0
1 44 30	0	334195	4.350992	4.367131	4.382660	4.397621	4.412052	4.425987	4.439456	4.452488	16	0
1 46 30	0	334338	351129	367263	382787	397744	412170	426101	439566	452595	14	0
1 48 30	0	334481	351266	367395	382914	397866	412288	426215	439677	452702	12	0
1 50 30	0	334624	351403	367527	383041	397989	412406	426329	439787	452808	10	0
1 52 30	0	334766	4.351540	4.367659	4.383168	4.398111	4.412524	4.426443	4.439897	4.452915	8	0
1 54 30	0	334909	351677	367790	383295	398233	412642	426557	440007	453022	6	0
1 56 30	0	335052	351814	367922	383422	398355	412760	426671	440118	453128	4	0
1 58 30	0	335194	351951	368054	383548	398477	412878	426785	440228	453235	2	0
2 0 30	0	335337	4.352088	4.368185	4.383675	4.398600	4.412996	4.426899	4.440338	4.453342	0	0
Time		20 ^m	16 ^m	12 ^m	8 ^m	4 ^m	0 ^m 22 ^h	56 ^m	52 ^m	48 ^m	Time	

23 Hours.

222

21 Hours.

2 Часа.

Log. Haversines. (6)

2 Часа.

		12 ^m	16 ^m	20 ^m	24 ^m	28 ^m	32 ^m	36 ^m	40 ^m	44 ^m		
Time	Arc.	33°	34°	35°	36°	37°	38°	39°	40°	41°	Time	s m
0 0	0	4.453342	4.465935	4.478142	4.489982	4.501476	4.512642	4.523495	4.534052	4.544325	0 2	0
0 2	30	453448	466039	478242	490080	501571	512734	523584	534138	544418	0 4	1
0 4	0	453555	466142	478342	490177	501665	512825	523674	534225	544494	0 6	1
0 6	30	453661	466245	478442	490274	501759	512917	523763	534312	544579	0 8	1
0 8	0	4.453768	4.466348	4.478542	4.490371	4.501854	4.513009	4.523852	4.534399	4.544663	0 10	1
0 10	30	453875	466451	478642	490468	501948	513100	523941	534485	544747	0 12	1
0 12	0	453981	466555	478742	490565	502042	513192	524030	534572	544832	0 14	1
0 14	30	454087	466658	478842	490662	502137	513283	524119	534659	544916	0 16	1
0 16	0	4.454194	4.466761	4.478942	4.490759	4.502231	4.513375	4.524208	4.534745	4.545000	0 18	1
0 18	30	454300	466864	479042	490856	502325	513466	524297	534832	545085	0 20	1
0 20	0	454407	466967	479142	490953	502419	513558	524386	534918	545169	0 22	1
0 22	30	454513	467070	479242	491050	502513	513650	524475	535005	545253	0 24	1
0 24	0	4.454619	4.467173	4.479342	4.491147	4.502607	4.513741	4.524564	4.535091	4.545338	0 26	1
0 26	30	454725	467276	479442	491244	502702	513832	524653	535178	545422	0 28	1
0 28	0	454832	467379	479542	491341	502796	513924	524742	535265	545505	0 30	1
0 30	30	454938	467482	479642	491438	502890	514015	524831	535351	545590	0 32	1
0 32	0	4.455044	4.467585	4.479741	4.491534	4.502984	4.514107	4.524920	4.535437	4.545674	0 34	1
0 34	30	455150	467688	479841	491631	503078	514198	525008	535524	545759	0 36	1
0 36	0	455256	467790	479941	491728	503172	514289	525097	535610	545843	0 38	1
0 38	30	455362	467893	480040	491825	503266	514381	525186	535697	545927	0 40	1
0 40	0	4.455469	4.467996	4.480140	4.491922	4.503360	4.514472	4.525275	4.535783	4.546011	0 42	1
0 42	30	455575	468099	480240	492018	503454	514563	525364	535870	546095	0 44	1
0 44	0	455681	468201	480339	492115	503547	514655	525452	535956	546179	0 46	1
0 46	30	455787	468304	480439	492212	503641	514746	525541	536042	546263	0 48	1
0 48	0	4.455893	4.468407	4.480538	4.492308	4.503735	4.514837	4.525630	4.536129	4.546347	0 50	1
0 50	30	455998	468509	480638	492405	503829	514928	525718	536215	546431	0 52	1
0 52	0	456104	468612	480738	492501	503923	515019	525807	536301	546515	0 54	1
0 54	30	456210	468715	480837	492598	504017	515111	525896	536387	546599	0 56	1
0 56	0	4.456316	4.468817	4.480937	4.492695	4.504110	4.515202	4.525984	4.536474	4.546683	0 58	1
0 58	30	456422	468920	481036	492791	504204	515293	526073	536560	546767	1 0	1
1 0	0	456528	469022	481135	492888	504298	515384	526162	536646	546851	1 2	1
1 2	30	456633	469125	481235	492984	504392	515475	526250	536732	546935	1 4	1
1 4	0	4.456739	4.469227	4.481334	4.493081	4.504485	4.515566	4.526339	4.536818	4.547019	1 6	1
1 6	30	456845	469330	481434	493177	504579	515657	526427	536904	547103	1 8	1
1 8	0	456951	469432	481533	493273	504673	515748	526516	536991	547187	1 10	1
1 10	30	457056	469535	481632	493370	504766	515839	526604	537077	547270	1 12	1
1 12	0	4.457162	4.469637	4.481731	4.493466	4.504860	4.515930	4.526693	4.537163	4.547354	1 14	1
1 14	30	457267	469739	481831	493562	504953	516021	526781	537249	547438	1 16	1
1 16	0	457373	469842	481930	493659	505047	516112	526870	537335	547522	1 18	1
1 18	30	457478	469944	482029	493755	505140	516203	526958	537421	547605	1 20	1
1 20	0	4.457584	4.470046	4.482128	4.493851	4.505234	4.516294	4.527046	4.537507	4.547689	1 22	1
1 22	30	457689	470148	482227	493947	505327	516384	527135	537593	547773	1 24	1
1 24	0	457795	470250	482327	494044	505421	516475	527223	537679	547857	1 26	1
1 26	30	457900	470353	482426	494140	505514	516566	527311	537765	547940	1 28	1
1 28	0	4.458006	4.470455	4.482525	4.494236	4.505608	4.516657	4.527400	4.537851	4.548024	1 30	1
1 30	30	458111	470557	482624	494332	505701	516748	527488	537937	548108	1 32	1
1 32	0	458216	470659	482723	494428	505794	516838	527576	538023	548191	1 34	1
1 34	30	458322	470761	482822	494524	505888	516929	527664	538108	548275	1 36	1
1 36	0	4.458427	4.470863	4.482921	4.494620	4.505981	4.517020	4.527753	4.538194	4.548358	1 38	1
1 38	30	458532	470965	483020	494717	506074	517110	527841	538280	548442	1 40	1
1 40	0	458638	471067	483119	494813	506168	517201	527929	538366	548526	1 42	1
1 42	30	458743	471169	483218	494909	506261	517292	528017	538452	548609	1 44	1
1 44	0	4.458848	4.471271	4.483316	4.495005	4.506354	4.517382	4.528105	4.538537	4.548693	1 46	1
1 46	30	458953	471373	483415	495100	506447	517473	528193	538623	548776	1 48	1
1 48	0	459058	471475	483514	495196	506541	517564	528281	538709	548860	1 50	1
1 50	30	459163	471577	483613	495292	506634	517654	528370	538795	548943	1 52	1
1 52	0	4.459268	4.471678	4.483712	4.495388	4.506727	4.517745	4.528458	4.538880	4.549027	1 54	1
1 54	30	459373	471780	483810	495484	506820	517835	528546	538966	549110	1 56	1
1 56	0	459478	471882	483909	495580	506913	517926	528634	539052	549193	1 58	1
1 58	30	459583	471984	484008	495676	507006	518016	528722	539137	549277	2 0	1
2 0	0	4.459688	4.472086	4.484107	4.495772	4.507099	4.518107	4.528810	4.539223	4.549360	2 2	1
Time		46 ^m	42 ^m	38 ^m	34 ^m	30 ^m	26 ^m	22 ^m	18 ^m	14 ^m	Time	

21 Часа.

21 Часа.

2 Hours.

Log. Haversines. (t)

2 Hours.

		14 ^m	18 ^m	22 ^m	26 ^m	30 ^m	34 ^m	38 ^m	42 ^m	46 ^m		
Time	Arc.	33° 30'	34° 30'	35° 30'	36° 30'	37° 30'	38° 30'	39° 30'	40° 30'	41° 30'	Time	Arc.
0 0 30	0	4.459688	4.472086	4.484107	4.495772	4.507099	4.518107	4.528810	4.539223	4.549360	0 2 30	0
0 2 30	30	459793	472187	484205	495867	507192	518197	528898	539309	549443	0 4 30	30
0 4 30	0	459898	472289	484304	495963	507285	518287	528986	539394	549527	0 6 30	0
0 6 30	30	460003	472391	484402	496059	507378	518378	529073	539480	549610	0 8 30	30
0 8 30	0	4.460108	4.472492	4.484501	4.496154	4.507471	4.518468	4.529161	4.539565	4.549693	0 10 30	0
0 10 30	30	460213	472594	484600	496250	507564	518559	529249	539651	549777	0 12 30	30
0 12 30	0	460317	472695	484698	496346	507657	518649	529337	539736	549860	0 14 30	0
0 14 30	30	460422	472797	484797	496441	507750	518739	529425	539822	549943	0 16 30	30
0 16 30	0	4.460527	4.472898	4.484895	4.496537	4.507843	4.518829	4.529513	4.539907	4.550026	0 18 30	0
0 18 30	30	460632	473000	484994	496633	507936	518920	529601	539993	550110	0 20 30	30
0 20 30	0	460736	473101	485092	496728	508028	519010	529688	540078	550193	0 22 30	0
0 22 30	30	460841	473203	485190	496824	508121	519100	529776	540163	550276	0 24 30	30
0 24 30	0	4.460946	4.473304	4.485289	4.496919	4.508214	4.519190	4.529864	4.540249	4.550359	0 26 30	0
0 26 30	30	461050	473406	485387	497015	508307	519281	529951	540334	550442	0 28 30	30
0 28 30	0	461155	473507	485485	497110	508400	519371	530039	540420	550525	0 30 30	0
0 30 30	30	461259	473608	485584	497206	508492	519461	530127	540505	550608	0 32 30	30
0 32 30	0	4.461364	4.473710	4.485682	4.497301	4.508585	4.519551	4.530215	4.540590	4.550692	0 34 30	0
0 34 30	30	461468	473811	485780	497396	508676	519641	530302	540676	550775	0 36 30	30
0 36 30	0	461573	473912	485878	497492	508770	519731	530390	540761	550858	0 38 30	0
0 38 30	30	461677	474013	485977	497587	508863	519821	530477	540846	550941	0 40 30	30
0 40 30	0	4.461782	4.474115	4.486075	4.497682	4.508956	4.519911	4.530565	4.540931	4.551024	0 42 30	0
0 42 30	30	461886	474216	486173	497778	509048	520001	530652	541017	551107	0 44 30	30
0 44 30	0	461990	474317	486271	497873	509141	520091	530740	541102	551190	0 46 30	0
0 46 30	30	462095	474418	486369	497968	509233	520181	530828	541187	551273	0 48 30	30
0 48 30	0	4.462199	4.474519	4.486467	4.498063	4.509326	4.520271	4.530915	4.541272	4.551356	0 50 30	0
0 50 30	30	462303	474520	486565	498159	509418	520361	531002	541357	551438	0 52 30	30
0 52 30	0	462407	474621	486663	498254	509511	520451	531090	541442	551521	0 54 30	0
0 54 30	30	462512	474722	486761	498349	509603	520541	531177	541527	551604	0 56 30	30
0 56 30	0	4.462616	4.474923	4.486859	4.498444	4.509696	4.520631	4.531265	4.541613	4.551687	0 58 30	0
0 58 30	30	462720	475024	486957	498539	509788	520720	531352	541698	551770	0 60 30	30
0 60 30	0	462824	475125	487055	498634	509880	520810	531440	541783	551853	0 62 30	0
0 62 30	30	462928	475226	487153	498729	509973	520900	531527	541868	551936	0 64 30	30
0 64 30	0	4.463032	4.475327	4.487311	4.498824	4.510065	4.520990	4.531614	4.541953	4.552018	0 66 30	0
0 66 30	30	463136	475428	487409	498919	510157	521080	531702	542038	552101	0 68 30	30
0 68 30	0	463240	475529	487507	499014	510250	521169	531789	542123	552184	0 70 30	0
0 70 30	30	463344	475630	487605	499109	510342	521259	531876	542208	552267	0 72 30	30
0 72 30	0	4.463448	4.475730	4.487643	4.499204	4.510434	4.521349	4.531963	4.542293	4.552349	0 74 30	0
0 74 30	30	463552	475831	487740	499299	510526	521438	532051	542377	552432	0 76 30	30
0 76 30	0	463656	475932	487838	499394	510619	521528	532138	542462	552515	0 78 30	0
0 78 30	30	463760	476033	487936	499489	510711	521618	532225	542547	552597	0 80 30	30
0 80 30	0	4.463864	4.476133	4.488033	4.499584	4.510803	4.521707	4.532312	4.542632	4.552680	0 82 30	0
0 82 30	30	463968	476234	488131	499679	510895	521797	532399	542717	552763	0 84 30	30
0 84 30	0	464071	476335	488229	499774	510987	521886	532487	542802	552845	0 86 30	0
0 86 30	30	464175	476435	488326	499868	511079	521976	532574	542887	552928	0 88 30	30
0 88 30	0	4.464279	4.476536	4.488424	4.499963	4.511172	4.522066	4.532661	4.542971	4.553010	0 90 30	0
0 90 30	30	464383	476636	488522	500058	511264	522155	532748	543056	553093	0 92 30	30
0 92 30	0	464486	476737	488619	500153	511356	522245	532835	543141	553175	0 94 30	0
0 94 30	30	464590	476837	488717	500247	511448	522334	532922	543226	553258	0 96 30	30
0 96 30	0	4.464694	4.476938	4.488814	4.500342	4.511540	4.522423	4.533009	4.543310	4.553341	0 98 30	0
0 98 30	30	464797	477038	488912	500437	511632	522513	533096	543395	553423	0 100 30	30
0 100 30	0	464901	477139	489009	500531	511724	522602	533183	543480	553505	0 102 30	0
0 102 30	30	465004	477239	489107	500626	511815	522692	533270	543564	553588	0 104 30	30
0 104 30	0	4.465108	4.477340	4.489204	4.500721	4.511907	4.522781	4.533357	4.543649	4.553670	0 106 30	0
0 106 30	30	465212	477440	489301	500815	511999	522870	533444	543733	553753	0 108 30	30
0 108 30	0	465315	477540	489399	500910	512091	522960	533531	543818	553835	0 110 30	0
0 110 30	30	465418	477641	489496	501004	512183	523049	533618	543903	553918	0 112 30	30
0 112 30	0	4.465522	4.477741	4.489593	4.501099	4.512275	4.523138	4.533704	4.543987	4.554000	0 114 30	0
0 114 30	30	465625	477841	489691	501193	512367	523228	533791	544072	554082	0 116 30	30
0 116 30	0	465729	477941	489788	501288	512458	523317	533878	544156	554165	0 118 30	0
0 118 30	30	465832	478042	489885	501382	512550	523406	533965	544241	554247	0 120 30	30
0 120 30	0	4.465935	4.478142	4.489982	4.501476	4.512642	4.523495	4.534052	4.544325	4.554329	0 122 30	0
0 122 30	30	466038	478242	490079	501570	512734	523584	534139	544409	554411	0 124 30	30
0 124 30	0	4.466148	4.478342	4.490181	4.501664	4.512833	4.523683	4.534231	4.544510	4.554520	0 126 30	0
0 126 30	30	466251	478342	490279	501758	512925	523772	534320	544599	554609	0 128 30	30
0 128 30	0	4.466359	4.478542	4.490379	4.501758	4.512925	4.523861	4.534409	4.544699	4.554718	0 130 30	0
0 130 30	30	466359	478542	490379	501852	513017	523960	534518	544788	554808	0 132 30	30
0 132 30	0	4.466568	4.478742	4.490479	4.501852	4.513017	4.524049	4.534609	4.544899	4.554927	0 134 30	0
0 134 30	30	466568	478742	490479	501946	513109	524158	534707	544977	554916	0 136 30	30
0 136 30	0	4.466777	4.478942	4.490579	4.501946	4.513109	4.524247	4.534707	4.545088	4.555035	0 138 30	0
0 138 30	30	466777	478942	490579	502040	513201	524347	534816	545176	555124	0 140 30	30
0 140 30	0	4.466986	4.479142	4.490679	4.502040	4.513201	4.524436	4.534816	4.545277	4.555233	0 142 30	0
0 142 30	30	466986	479142	490679	502134	513293	524546	534925	545265	555322	0 144 30	30
0 144 30	0	4.467195	4.479342	4.490779	4.502134	4.513293	4.524635	4.534925	4.545368	4.555441	0 146 30	0
0 146 30	30	467195	479342	490779	502228	513385	524745	535034	545456	555530	0 148 30	30
0 148 30	0	4.467404	4.479542	4.490879	4.502228	4.513385	4.524834	4.535034	4.545559	4.555649	0 150 30	0
0 150 30	30	467404	479542	490879	502322	513477	524954	535143	545645	555738	0 152 30	30
0 152 30	0	4.467613	4.479742	4.490979	4.502322	4.513477	4.525043	4.535243	4.545756	4.555847	0 154 30	0
0 154 30	30	467613	479742	490979	502416	513569	525163	535352	545844	555927	0 156 30	30
0 156 30	0	4.467822	4.479942	4.491079	4.502416	4.513569	4.525252	4.535452	4.545945	4.556036	0 158 30	0
0 158 30	30	467822	479942	491079	502510	513661	525282	535561	546033	556116	0 160 30	30
0 160 30	0	4.468031	4.480142	4.491179	4.502510	4.513661	4.525391	4.535661	4.546122	4.556227	0 162 30	0
0 162 30	30	468031										

2 Hours.

Log. Havensine. (4)

3 Hours.

Time m	Arc. "	48 ^m	52 ^m	56 ^m	3 ^h 0 ^m	4 ^m	8 ^m	12 ^m	16 ^m	20 ^m	Time s m
		42°	43°	44°	45°	46°	47°	48°	49°	50°	
0	0	4.554329	4.564075	4.573575	4.582840	4.591878	4.600700	4.609313	4.617727	4.625948	0 2
0	2	4.554411	4.564156	4.573654	4.582916	4.591952	4.600772	4.609384	4.617796	4.626016	58 1
0	4	4.554494	4.564236	4.573732	4.582992	4.592027	4.600845	4.609455	4.617865	4.626084	56 1
0	6	4.554576	4.564316	4.573810	4.583068	4.592101	4.600917	4.609526	4.617935	4.626151	54 1
0	8	4.554658	4.564396	4.573888	4.583144	4.592175	4.600990	4.609597	4.618004	4.626219	52 1
0	10	4.554740	4.564476	4.573966	4.583221	4.592250	4.601063	4.609668	4.618073	4.626287	50 1
0	12	4.554822	4.564556	4.574044	4.583297	4.592324	4.601135	4.609739	4.618142	4.626354	48 1
0	14	4.554905	4.564636	4.574122	4.583373	4.592398	4.601208	4.609809	4.618212	4.626422	46 1
0	16	4.554987	4.564716	4.574200	4.583449	4.592473	4.601280	4.609880	4.618281	4.626490	44 1
0	18	4.555069	4.564796	4.574278	4.583525	4.592547	4.601353	4.609951	4.618350	4.626557	42 1
0	20	4.555151	4.564876	4.574356	4.583601	4.592621	4.601425	4.610022	4.618419	4.626625	40 1
0	22	4.555233	4.564956	4.574434	4.583677	4.592696	4.601498	4.610093	4.618488	4.626693	38 1
0	24	4.555315	4.565036	4.574512	4.583753	4.592770	4.601570	4.610163	4.618558	4.626760	36 1
0	26	4.555397	4.565116	4.574590	4.583830	4.592844	4.601643	4.610234	4.618627	4.626828	34 1
0	28	4.555479	4.565196	4.574668	4.583906	4.592918	4.601715	4.610305	4.618696	4.626895	32 1
0	30	4.555561	4.565276	4.574746	4.583982	4.592992	4.601788	4.610376	4.618765	4.626963	30 1
0	32	4.555643	4.565356	4.574824	4.584058	4.593067	4.601860	4.610446	4.618834	4.627030	28 1
0	34	4.555725	4.565436	4.574902	4.584134	4.593141	4.601932	4.610517	4.618903	4.627098	26 1
0	36	4.555807	4.565516	4.574980	4.584210	4.593215	4.602005	4.610588	4.618972	4.627165	24 1
0	38	4.555889	4.565596	4.575058	4.584285	4.593289	4.602077	4.610659	4.619041	4.627233	22 1
0	40	4.555971	4.565676	4.575136	4.584361	4.593363	4.602149	4.610729	4.619110	4.627300	20 1
0	42	4.556053	4.565755	4.575213	4.584437	4.593437	4.602222	4.610800	4.619179	4.627368	18 1
0	44	4.556135	4.565835	4.575291	4.584513	4.593511	4.602294	4.610870	4.619248	4.627435	16 1
0	46	4.556217	4.565915	4.575369	4.584589	4.593585	4.602366	4.610941	4.619317	4.627503	14 1
0	48	4.556299	4.565995	4.575447	4.584665	4.593659	4.602439	4.611012	4.619386	4.627570	12 1
0	50	4.556380	4.566074	4.575525	4.584741	4.593733	4.602511	4.611082	4.619455	4.627637	10 1
0	52	4.556462	4.566154	4.575602	4.584817	4.593807	4.602583	4.611153	4.619524	4.627705	8 1
0	54	4.556544	4.566234	4.575680	4.584893	4.593881	4.602656	4.611223	4.619593	4.627772	6 1
0	56	4.556626	4.566314	4.575758	4.584968	4.593955	4.602728	4.611294	4.619662	4.627840	4 1
0	58	4.556708	4.566393	4.575835	4.585044	4.594029	4.602800	4.611365	4.619731	4.627907	2 1
0	60	4.556789	4.566473	4.575913	4.585120	4.594103	4.602872	4.611435	4.619800	4.627974	0 1
0	62	4.556871	4.566553	4.575991	4.585196	4.594177	4.602944	4.611506	4.619869	4.628042	58 0
0	64	4.556953	4.566632	4.576068	4.585272	4.594251	4.603017	4.611576	4.619938	4.628109	56 0
0	66	4.557035	4.566712	4.576146	4.585347	4.594325	4.603089	4.611647	4.620007	4.628176	54 0
0	68	4.557116	4.566792	4.576224	4.585423	4.594399	4.603161	4.611717	4.620075	4.628244	52 0
0	70	4.557198	4.566871	4.576301	4.585499	4.594473	4.603233	4.611788	4.620144	4.628311	50 0
0	72	4.557280	4.566951	4.576379	4.585574	4.594547	4.603305	4.611858	4.620213	4.628378	48 0
0	74	4.557361	4.567030	4.576457	4.585650	4.594621	4.603377	4.611928	4.620282	4.628445	46 0
0	76	4.557443	4.567110	4.576534	4.585726	4.594695	4.603449	4.611999	4.620351	4.628513	44 0
0	78	4.557524	4.567189	4.576612	4.585801	4.594768	4.603521	4.612069	4.620420	4.628580	42 0
0	80	4.557606	4.567269	4.576689	4.585877	4.594842	4.603594	4.612140	4.620488	4.628647	40 0
0	82	4.557687	4.567348	4.576767	4.585953	4.594916	4.603666	4.612210	4.620557	4.628714	38 0
0	84	4.557769	4.567428	4.576844	4.586028	4.594990	4.603738	4.612280	4.620626	4.628782	36 0
0	86	4.557851	4.567507	4.576922	4.586104	4.595064	4.603810	4.612351	4.620695	4.628849	34 0
0	88	4.557932	4.567587	4.576999	4.586179	4.595137	4.603882	4.612421	4.620763	4.628916	32 0
0	90	4.558014	4.567666	4.577077	4.586255	4.595211	4.603954	4.612491	4.620832	4.628983	30 0
0	92	4.558095	4.567746	4.577154	4.586330	4.595285	4.604026	4.612562	4.620901	4.629050	28 0
0	94	4.558176	4.567825	4.577231	4.586406	4.595358	4.604098	4.612632	4.620969	4.629117	26 0
0	96	4.558258	4.567904	4.577309	4.586482	4.595432	4.604170	4.612702	4.621038	4.629184	24 0
0	98	4.558339	4.567984	4.577386	4.586557	4.595506	4.604242	4.612773	4.621107	4.629252	22 0
0	100	4.558421	4.568063	4.577464	4.586632	4.595579	4.604313	4.612843	4.621175	4.629319	20 0
0	102	4.558502	4.568142	4.577541	4.586708	4.595653	4.604385	4.612913	4.621244	4.629386	18 0
0	104	4.558583	4.568222	4.577618	4.586783	4.595727	4.604457	4.612983	4.621313	4.629453	16 0
0	106	4.558665	4.568301	4.577696	4.586859	4.595800	4.604529	4.613053	4.621381	4.629520	14 0
0	108	4.558746	4.568380	4.577773	4.586934	4.595874	4.604601	4.613124	4.621450	4.629587	12 0
0	110	4.558827	4.568459	4.577850	4.587010	4.595948	4.604673	4.613194	4.621518	4.629654	10 0
0	112	4.558909	4.568539	4.577927	4.587085	4.596021	4.604745	4.613264	4.621587	4.629721	8 0
0	114	4.558990	4.568618	4.578005	4.587160	4.596095	4.604817	4.613334	4.621656	4.629788	6 0
0	116	4.559071	4.568697	4.578082	4.587236	4.596168	4.604888	4.613404	4.621724	4.629855	4 0
0	118	4.559152	4.568776	4.578159	4.587311	4.596242	4.604960	4.613474	4.621793	4.629922	2 0
0	120	4.559234	4.568855	4.578236	4.587386	4.596315	4.605032	4.613545	4.621861	4.629989	0 0
0	122	4.559315	4.568934	4.578313	4.587461	4.596389	4.605104	4.613615	4.621930	4.630056	58 0
0	124	4.559396	4.569013	4.578390	4.587536	4.596462	4.605176	4.613685	4.621999	4.630123	56 0
0	126	4.559477	4.569092	4.578467	4.587611	4.596536	4.605248	4.613755	4.622068	4.630190	54 0
0	128	4.559558	4.569171	4.578544	4.587686	4.596609	4.605320	4.613825	4.622137	4.630257	52 0
0	130	4.559639	4.569250	4.578621	4.587761	4.596683	4.605392	4.613895	4.622206	4.630324	50 0
0	132	4.559720	4.569329	4.578698	4.587836	4.596756	4.605464	4.613965	4.622275	4.630391	48 0
0	134	4.559801	4.569408	4.578775	4.587911	4.596830	4.605536	4.614035	4.622344	4.630458	46 0
0	136	4.559882	4.569487	4.578852	4.587986	4.596903	4.605608	4.614105	4.622413	4.630525	44 0
0	138	4.559963	4.569566	4.578929	4.588061	4.596977	4.605680	4.614175	4.622482	4.630592	42 0
0	140	4.560044	4.569645	4.579006	4.588136	4.597050	4.605752	4.614245	4.622551	4.630659	40 0
0	142	4.560125	4.569724	4.579083	4.588211	4.597124	4.605824	4.614315	4.622620	4.630726	38 0
0	144	4.560206	4.569803	4.579160	4.588286	4.597197	4.605896	4.614385	4.622689	4.630793	36 0
0	146	4.560287	4.569882	4.579237	4.588361	4.597271	4.605968	4.614455	4.622758	4.630860	34 0
0	148	4.560368	4.569961	4.579314	4.588436	4.597344	4.606040	4.614525	4.622827	4.630927	32 0
0	150	4.560449	4.570040	4.579391	4.588511	4.597418	4.606112	4.614595	4.622896	4.630994	30 0
0	152	4.560530	4.570119	4.579468	4.588586	4.597491	4.606184	4.614665	4.622965	4.631061	28 0
0	154	4.560611	4.570198	4.579545	4.588661	4.597565	4.606256	4.614735	4.623034	4.631128	26 0
0	156	4.560692	4.570277	4.579622	4.588736	4.597638	4.606328	4.614805	4.623103	4.631195	24 0
0	158	4.560773	4.570356	4.579699	4.588811	4.597712	4.606400	4.614875	4.623172	4.631262	22 0
0	160	4.560854	4.570435	4.579776	4.588886	4.597785	4.606472	4.614945	4.623241	4.631329	20 0
0	162	4.560935	4.570514	4.579853	4.588961	4.597859	4.606544	4.615015	4.623310	4.631396	18 0
0	164	4.561016	4.570593	4.579930	4.589036	4.597932	4.606616	4.615085	4.623379	4.631463	16 0
0											

2 Hours.

Log. Haversines. (i)

3 Hours.

		50 ^m	54 ^m	58 ^m	3 ^h 2 ^m	6 ^m	10 ^m	14 ^m	18 ^m	22 ^m		
Time	Arc.	42° 30'	43° 30'	44° 30'	45° 30'	46° 30'	47° 30'	48° 30'	49° 30'	50° 30'	Time	s m
0 0	0	4.559234	4.568855	4.578236	4.587386	4.596315	4.605032	4.613545	4.621861	4.629989	0 2	0
0 1	0	559315	568935	578314	587462	596389	605104	613615	621930	630056	1 0	0
0 2	0	559396	569014	578391	587537	596462	605175	613685	621998	630123	1 1	0
0 3	0	559477	569093	578468	587612	596536	605247	613755	622067	630190	1 2	0
0 4	0	4.559558	4.569172	4.578545	4.587688	4.596609	4.605319	4.613825	4.622135	4.630257	1 3	0
0 5	0	559640	569251	578622	587763	596683	605391	613895	622204	630324	1 4	0
0 6	0	559721	569330	578699	587838	596756	605462	613965	622272	630391	1 5	0
0 7	0	559802	569409	578776	587913	596830	605534	614035	622340	630457	1 6	0
0 8	0	4.559883	4.569488	4.578853	4.587988	4.596903	4.605606	4.614105	4.622409	4.630524	1 7	0
0 9	0	559964	569567	578930	588064	596976	605677	614175	622477	630591	1 8	0
1 0	0	560045	569646	579008	588139	597050	605749	614245	622546	630658	1 9	0
1 1	0	560126	569725	579085	588214	597123	605821	614315	622614	630725	2 0	0
1 2	0	4.560207	4.569804	4.579162	4.588289	4.597196	4.605892	4.614385	4.622682	4.630792	2 1	0
1 3	0	560288	569883	579239	588364	597270	605964	614455	622751	630858	2 2	0
1 4	0	560369	569962	579316	588439	597343	606035	614525	622819	630925	2 3	0
1 5	0	560450	570041	579393	588514	597416	606107	614595	622887	630992	2 4	0
1 6	0	4.560531	4.570120	4.579469	4.588590	4.597490	4.606179	4.614665	4.622956	4.631059	2 5	0
1 7	0	560612	570199	579546	588665	597563	606250	614735	623024	631126	2 6	0
1 8	0	560693	570278	579623	588740	597636	606322	614804	623092	631192	2 7	0
1 9	0	560774	570357	579700	588815	597709	606393	614874	623160	631259	2 8	0
2 0	0	4.560855	4.570435	4.579777	4.588890	4.597783	4.606465	4.614944	4.623229	4.631326	2 9	0
2 1	0	560935	570514	579854	588965	597856	606536	615014	623297	631392	3 0	0
2 2	0	561016	570593	579931	589040	597929	606608	615084	623365	631459	3 1	0
2 3	0	561097	570672	580008	589115	598002	606679	615154	623433	631526	3 2	0
2 4	0	4.561178	4.570751	4.580084	4.589190	4.598075	4.606751	4.615223	4.623502	4.631593	3 3	0
2 5	0	561259	570829	580161	589265	598149	606822	615293	623570	631659	3 4	0
2 6	0	561339	570908	580238	589339	598222	606893	615363	623638	631726	3 5	0
2 7	0	561420	570987	580315	589414	598295	606965	615433	623706	631792	3 6	0
2 8	0	4.561501	4.571066	4.580392	4.589489	4.598368	4.607036	4.615502	4.623774	4.631859	3 7	0
2 9	0	561582	571144	580468	589564	598441	607108	615572	623842	631926	3 8	0
3 0	0	561662	571223	580545	589639	598514	607179	615642	623911	631992	3 9	0
3 1	0	561743	571302	580622	589714	598587	607250	615712	623979	632059	4 0	0
3 2	0	4.561824	4.571380	4.580699	4.589789	4.598660	4.607322	4.615781	4.624047	4.632125	4 1	0
3 3	0	561904	571459	580775	589864	598733	607393	615851	624115	632192	4 2	0
3 4	0	561985	571537	580852	589938	598806	607464	615921	624183	632259	4 3	0
3 5	0	562066	571616	580929	590013	598879	607535	615990	624251	632325	4 4	0
3 6	0	4.562146	4.571695	4.581005	4.590088	4.598952	4.607607	4.616060	4.624319	4.632392	4 5	0
3 7	0	562227	571773	581082	590163	599025	607678	616129	624387	632458	4 6	0
3 8	0	562307	571852	581158	590237	599098	607749	616199	624455	632525	4 7	0
3 9	0	562388	571930	581235	590312	599171	607821	616269	624523	632591	4 8	0
4 0	0	4.562468	4.572009	4.581312	4.590387	4.599244	4.607892	4.616338	4.624591	4.632658	4 9	0
4 1	0	562549	572087	581388	590462	599317	607963	616408	624659	632724	5 0	0
4 2	0	562629	572166	581465	590536	599390	608034	616477	624727	632790	5 1	0
4 3	0	562710	572244	581541	590611	599463	608105	616547	624795	632857	5 2	0
4 4	0	4.562790	4.572323	4.581618	4.590686	4.599536	4.608176	4.616616	4.624863	4.632923	5 3	0
4 5	0	562871	572401	581694	590760	599608	608248	616686	624931	632990	5 4	0
4 6	0	562951	572479	581771	590835	599681	608319	616755	624999	633056	5 5	0
4 7	0	563032	572558	581847	590909	599754	608390	616825	625067	633122	5 6	0
4 8	0	4.563112	4.572636	4.581924	4.590984	4.599827	4.608461	4.616894	4.625135	4.633189	5 7	0
4 9	0	563192	572715	582000	591059	599900	608532	616964	625202	633255	5 8	0
5 0	0	563273	572793	582076	591133	599973	608603	617033	625270	633322	5 9	0
5 1	0	563353	572871	582153	591208	600045	608674	617103	625338	633388	6 0	0
5 2	0	4.563433	4.572949	4.582229	4.591282	4.600118	4.608745	4.617172	4.625406	4.633454	6 1	0
5 3	0	563514	573028	582305	591357	600191	608816	617241	625474	633520	6 2	0
5 4	0	563594	573106	582382	591431	600264	608887	617311	625542	633587	6 3	0
5 5	0	563674	573184	582458	591506	600336	608958	617380	625609	633653	6 4	0
5 6	0	4.563755	4.573263	4.582534	4.591580	4.600409	4.609029	4.617450	4.625677	4.633719	6 5	0
5 7	0	563835	573341	582611	591655	600482	609100	617519	625745	633786	6 6	0
5 8	0	563915	573419	582687	591729	600554	609171	617588	625813	633852	6 7	0
5 9	0	563995	573497	582763	591804	600627	609242	617658	625880	633918	6 8	0
6 0	0	4.564075	4.573575	4.582840	4.591878	4.600700	4.609313	4.617727	4.625948	4.633984	6 9	0
Time		8 ^m	4 ^m	0 ^m 21 ^h	56 ^m	52 ^m	48 ^m	44 ^m	40 ^m	36 ^m	Time	

21 Hours.

224

20 Hours.

3 Hours.

Log. Haversines. (1)

3 Hours.

Time m s	Ave. "	24"	28"	32"	36"	40"	44"	48"	52"	56"	Time m s
		51°	52°	53°	54°	55°	56°	57°	58°	59°	
0 0	0	4.633984	4.641842	4.649527	4.657047	4.664406	4.671609	4.678663	4.685571	4.692339	0 2
0 2	0	634051	641907	649591	657109	664466	671669	678721	685628	692395	58 1
0 4	1	634117	641971	649654	657171	664527	671728	678779	685685	692450	56 1
0 6	1	634183	642036	649717	657233	664588	671787	678837	685742	692506	54 1
0 8	2	4.634249	4.642101	4.649781	4.657295	4.664648	4.671847	4.678895	4.685799	4.692562	52 1
0 10	2	634315	642166	649844	657356	664709	671906	678954	685856	692618	50 1
0 12	3	634381	642230	649907	657418	664769	671965	679012	685913	692674	48 1
0 14	3	634447	642295	649971	657480	664830	672025	679070	685970	692729	46 1
0 16	4	4.634514	4.642360	4.650034	4.657452	4.664891	4.672084	4.679128	4.686027	4.692785	44 1
0 18	4	634580	642424	650097	657504	664951	672143	679186	686084	692841	42 1
0 20	5	634646	642489	650160	657566	665012	672203	679244	686140	692897	40 1
0 22	5	634712	642553	650223	657628	665072	672262	679302	686197	692952	38 1
0 24	6	4.634778	4.642618	4.650287	4.657790	4.665133	4.672321	4.679360	4.686254	4.693008	36 1
0 26	6	634844	642683	650350	657852	665193	672381	679418	686311	693064	34 1
0 28	7	634910	642747	650413	657913	665254	672440	679476	686368	693119	32 1
0 30	7	634976	642812	650476	657975	665314	672499	679534	686425	693175	30 1
0 32	8	4.635042	4.642876	4.650539	4.658037	4.665375	4.672558	4.679592	4.686482	4.693231	28 1
0 34	8	635108	642941	650603	658099	665435	672618	679650	686538	693286	26 1
0 36	9	635174	643006	650666	658161	665496	672677	679708	686595	693342	24 1
0 38	9	635240	643070	650729	658222	665556	672736	679766	686652	693398	22 1
0 40	10	4.635306	4.643135	4.650792	4.658284	4.665617	4.672795	4.679824	4.686709	4.693453	20 1
0 42	10	635372	643199	650855	658346	665677	672854	679882	686766	693509	18 1
0 44	11	635438	643264	650918	658408	665738	672913	679940	686822	693565	16 1
0 46	11	635504	643328	650981	658469	665798	672973	679998	686879	693620	14 1
0 48	12	4.635570	4.643393	4.651044	4.658531	4.665859	4.673032	4.680056	4.686936	4.693676	12 1
0 50	12	635636	643457	651107	658593	665919	673091	680114	686993	693731	10 1
0 52	13	635702	643521	651170	658655	665979	673150	680172	687049	693787	8 1
0 54	13	635768	643586	651234	658716	666040	673209	680230	687106	693843	6 1
0 56	14	4.635833	4.643650	4.651297	4.658778	4.666100	4.673268	4.680288	4.687163	4.693898	4 1
0 58	14	635899	643715	651360	658840	666160	673327	680345	687219	693954	2 1
1 0 15	0	635965	643779	651423	658901	666221	673387	680403	687276	694009	0 0
1 2 15	30	636031	643844	651486	658963	666281	673446	680461	687333	694065	58 0
1 4 16	0	4.636097	4.643908	4.651549	4.659025	4.666341	4.673505	4.680519	4.687389	4.694120	56 0
1 6 16	30	636163	643972	651612	659086	666402	673564	680577	687446	694176	54 0
1 8 17	0	636228	644037	651674	659148	666462	673623	680635	687503	694231	52 0
1 10 17	30	636294	644101	651737	659209	666522	673682	680693	687559	694287	50 0
1 12 18	0	4.636360	4.644165	4.651800	4.659271	4.666583	4.673741	4.680750	4.687616	4.694342	48 0
1 14 18	30	636426	644230	651863	659333	666643	673800	680808	687673	694398	46 0
1 16 19	0	636492	644294	651926	659394	666703	673859	680866	687729	694453	44 0
1 18 19	30	636557	644358	651989	659456	666764	673918	680924	687786	694509	42 0
1 20 20	0	4.636623	4.644423	4.652052	4.659517	4.666824	4.673977	4.680982	4.687842	4.694564	40 0
1 22 20	30	636689	644487	652115	659579	666884	674036	681039	687899	694620	38 0
1 24 21	0	636754	644551	652178	659640	666944	674095	681097	687956	694675	36 0
1 26 21	30	636820	644615	652241	659702	667004	674154	681155	688012	694730	34 0
1 28 22	0	4.636886	4.644680	4.652303	4.659763	4.667065	4.674213	4.681213	4.688069	4.694786	32 0
1 30 22	30	636951	644744	652366	659825	667125	674272	681270	688125	694841	30 0
1 32 23	0	637017	644808	652429	659886	667185	674331	681328	688182	694897	28 0
1 34 23	30	637083	644872	652492	659948	667245	674390	681386	688238	694952	26 0
1 36 24	0	4.637148	4.644936	4.652555	4.660009	4.667305	4.674448	4.681443	4.688295	4.695007	24 0
1 38 24	30	637214	645001	652618	660071	667366	674507	681501	688351	695063	22 0
1 40 25	0	637280	645065	652680	660132	667426	674566	681559	688408	695118	20 0
1 42 25	30	637345	645129	652743	660194	667486	674625	681616	688464	695173	18 0
1 44 26	0	4.637411	4.645193	4.652806	4.660255	4.667546	4.674684	4.681674	4.688521	4.695229	16 0
1 46 26	30	637476	645257	652869	660316	667606	674743	681732	688577	695284	14 0
1 48 27	0	637542	645321	652931	660378	667666	674802	681789	688634	695339	12 0
1 50 27	30	637607	645385	652994	660439	667726	674860	681847	688690	695395	10 0
1 52 28	0	4.637673	4.645450	4.653057	4.660500	4.667786	4.674919	4.681905	4.688747	4.695450	8 0
1 54 28	30	637739	645514	653119	660562	667846	674978	681962	688803	695505	6 0
1 56 29	0	637804	645578	653182	660623	667906	675037	682020	688859	695561	4 0
1 58 29	30	637870	645642	653245	660685	667966	675096	682077	688916	695616	2 0
2 0 30	0	4.637935	4.645706	4.653307	4.660746	4.668026	4.675155	4.682135	4.688972	4.695671	0 0
m	s	34"	30"	26"	22"	18"	14"	10"	6"	2"	m

20 Hours.

20 Hours.

3 Hours.

Log. Havensines. (t)

3 Hours.

		26 ^m	30 ^m	34 ^m	38 ^m	42 ^m	46 ^m	50 ^m	54 ^m	58 ^m		
Time	Arg.	51° 30'	52° 30'	53° 30'	54° 30'	55° 30'	56° 30'	57° 30'	58° 30'	59° 30'	Time	m
0 30	0	4.637935	4.645706	4.653307	4.660746	4.668026	4.675155	4.682135	4.688972	4.695671	0 2	8
1 30	0	638000	645770	653370	660807	668086	675213	682192	689029	695726	1 0	8
2 30	0	638066	645834	653433	660868	668147	675272	682250	689085	695782	1 1	6
3 30	0	638131	645898	653495	660930	668207	675331	682308	689141	695837	1 2	4
4 30	0	638197	645962	653558	660991	668266	675390	682365	689198	695892	1 3	2
5 30	0	638262	646026	653621	661052	668326	675448	682423	689254	695947	1 4	0
6 30	0	638328	646090	653683	661114	668386	675507	682480	689310	696003	1 5	0
7 30	0	638393	646154	653746	661175	668446	675566	682538	689367	696058	1 6	0
8 30	0	638458	646218	653808	661236	668506	675624	682595	689423	696113	1 7	0
9 30	0	638524	646282	653871	661297	668566	675683	682653	689479	696168	1 8	0
10 30	0	638589	646346	653933	661359	668626	675742	682710	689536	696223	1 9	0
11 30	0	638655	646410	653996	661420	668686	675800	682768	689592	696278	2 0	0
12 30	0	638720	646473	654059	661481	668746	675859	682825	689648	696334	2 1	0
13 30	0	638785	646537	654121	661542	668806	675918	682882	689705	696389	2 2	0
14 30	0	638851	646601	654184	661603	668866	675976	682940	689761	696444	2 3	0
15 30	0	638916	646665	654246	661664	668926	676035	682997	689817	696499	2 4	0
16 30	0	638981	646729	654309	661726	668988	676094	683055	689873	696554	2 5	0
17 30	0	639046	646793	654371	661787	669045	676152	683112	689930	696609	2 6	0
18 30	0	639112	646857	654433	661848	669105	676211	683170	689986	696664	2 7	0
19 30	0	639177	646920	654496	661909	669165	676269	683227	690042	696719	2 8	0
20 30	0	639242	646984	654558	661970	669225	676328	683284	690098	696774	2 9	0
21 30	0	639307	647048	654621	662031	669285	676387	683342	690154	696830	3 0	0
22 30	0	639373	647112	654683	662092	669345	676445	683399	690211	696885	3 1	0
23 30	0	639438	647176	654746	662153	669404	676504	683456	690267	696940	3 2	0
24 30	0	639503	647239	654808	662214	669464	676562	683514	690323	696995	3 3	0
25 30	0	639568	647303	654870	662275	669524	676621	683571	690379	697050	3 4	0
26 30	0	639633	647367	654933	662337	669584	676679	683628	690435	697105	3 5	0
27 30	0	639698	647431	654995	662398	669643	676738	683686	690491	697160	3 6	0
28 30	0	639764	647494	655057	662459	669703	676796	683743	690548	697215	3 7	0
29 30	0	639829	647558	655120	662520	669763	676855	683800	690604	697270	3 8	0
30 30	0	639894	647622	655182	662581	669823	676913	683857	690660	697325	3 9	0
31 30	0	639959	647686	655244	662642	669882	676972	683915	690716	697380	4 0	0
32 30	0	640024	647749	655307	662703	669942	677030	683972	690772	697435	4 1	0
33 30	0	640089	647813	655369	662764	670002	677089	684029	690828	697490	4 2	0
34 30	0	640154	647877	655431	662824	670061	677147	684086	690884	697545	4 3	0
35 30	0	640219	647940	655494	662885	670121	677205	684144	690940	697600	4 4	0
36 30	0	640284	648004	655556	662946	670181	677264	684201	690996	697654	4 5	0
37 30	0	640349	648067	655618	663007	670240	677322	684258	691052	697709	4 6	0
38 30	0	640414	648131	655680	663068	670300	677381	684315	691108	697764	4 7	0
39 30	0	640479	648195	655743	663129	670360	677439	684373	691164	697819	4 8	0
40 30	0	640544	648258	655805	663190	670419	677497	684430	691220	697874	4 9	0
41 30	0	640609	648322	655867	663251	670479	677556	684487	691276	697929	5 0	0
42 30	0	640674	648386	655929	663312	670538	677614	684544	691332	697984	5 1	0
43 30	0	640739	648449	655991	663373	670598	677673	684601	691388	698039	5 2	0
44 30	0	640804	648512	656054	663433	670658	677731	684658	691444	698094	5 3	0
45 30	0	640869	648576	656116	663494	670717	677789	684715	691500	698148	5 4	0
46 30	0	640934	648639	656178	663555	670777	677848	684773	691556	698203	5 5	0
47 30	0	640999	648703	656240	663616	670836	677906	684830	691612	698258	5 6	0
48 30	0	641064	648766	656302	663677	670896	677964	684887	691668	698313	5 7	0
49 30	0	641129	648830	656364	663738	670955	678022	684944	691724	698368	5 8	0
50 30	0	641194	648893	656426	663798	671015	678081	685001	691780	698422	5 9	0
51 30	0	641259	648957	656488	663859	671074	678139	685058	691836	698477	6 0	0
52 30	0	641323	649020	656550	663920	671134	678197	685115	691892	698532	6 1	0
53 30	0	641388	649084	656613	663981	671193	678255	685172	691948	698587	6 2	0
54 30	0	641453	649147	656675	664041	671253	678314	685229	692004	698642	6 3	0
55 30	0	641518	649211	656737	664102	671312	678372	685286	692060	698696	6 4	0
56 30	0	641583	649274	656799	664163	671372	678430	685343	692115	698751	6 5	0
57 30	0	641648	649337	656861	664223	671431	678488	685400	692171	698806	6 6	0
58 30	0	641712	649401	656923	664284	671490	678546	685457	692227	698861	6 7	0
59 30	0	641777	649464	656985	664345	671550	678605	685514	692283	698915	6 8	0
60 30	0	641842	649527	657047	664406	671609	678663	685571	692339	698970	6 9	0
Time		32 ^m	28 ^m	24 ^m	20 ^m	16 ^m	12 ^m	8 ^m	4 ^m	0 ^m	Time	m

20 Hours.

225

2

20 Hours.

4 Hours.

 $\frac{1}{2}$ Log. Haversines. (2)

4 Hours.

Time m s	Arc. °	0 ^m	4 ^m	8 ^m	12 ^m	16 ^m	20 ^m	24 ^m	28 ^m	32 ^m	Time m s
		60°	61°	62°	63°	64°	65°	66°	67°	68°	
0 0	0	4.698970	4.705469	4.711839	4.718085	4.724210	4.730216	4.736109	4.741889	4.747562	0 4
0 4	1	699079	705576	711944	718188	724311	730316	736206	741985	747655	56 3
0 8	2	699189	705683	712049	718291	724412	730415	736303	742080	747749	52 3
0 12	3	699298	705790	712155	718394	724513	730514	736400	742176	747842	48 3
0 16	4	699407	705897	712260	718497	724614	730613	736498	742271	747936	44 3
0 20	5	699517	706005	712364	718600	724715	730712	736595	742366	748029	40 3
0 24	6	699626	706112	712469	718703	724816	730811	736692	742462	748123	36 3
0 28	7	699735	706219	712574	718806	724916	730910	736789	742557	748216	32 3
0 32	8	699844	706326	712679	718909	725017	731009	736886	742652	748310	28 3
0 36	9	699953	706432	712784	719011	725118	731108	736983	742747	748403	24 3
0 40	10	700062	706539	712889	719114	725219	731206	737080	742842	748497	20 3
0 44	11	700171	706646	712994	719217	725320	731305	737177	742937	748590	16 3
0 48	12	700280	706753	713098	719320	725420	731404	737274	743032	748683	12 3
0 52	13	700389	706860	713203	719422	725521	731503	737371	743128	748777	8 3
0 56	14	700498	706967	713308	719525	725622	731601	737468	743223	748870	4 3
1 0	15	700607	707073	713412	719627	725722	731700	737564	743318	748963	0 3
1 4	16	700716	707180	713517	719730	725823	731799	737661	743413	749056	56 2
1 8	17	700825	707287	713621	719833	725923	731897	737758	743507	749149	52 2
1 12	18	700933	707393	713726	719935	726024	731996	737855	743602	749242	48 2
1 16	19	701042	707500	713830	720037	726124	732095	737951	743697	749336	44 2
1 20	20	701151	707606	713935	720140	726225	732193	738048	743792	749429	40 2
1 24	21	701259	707713	714039	720242	726325	732292	738145	743887	749522	36 2
1 28	22	701368	707819	714144	720345	726426	732390	738241	743982	749615	32 2
1 32	23	701477	707926	714248	720447	726526	732489	738338	744076	749708	28 2
1 36	24	701585	708032	714352	720549	726626	732587	738434	744171	749801	24 2
1 40	25	701694	708139	714457	720651	726727	732685	738531	744266	749894	20 2
1 44	26	701802	708245	714561	720754	726827	732784	738627	744361	749987	16 2
1 48	27	701911	708351	714665	720856	726927	732882	738724	744455	750079	12 2
1 52	28	702019	708457	714769	720958	727027	732980	738820	744550	750172	8 2
1 56	29	702127	708564	714873	721060	727127	733079	738916	744644	750265	4 2
2 0	30	702236	708670	714978	721162	727228	733177	739013	744739	750358	0 2
2 4	31	702344	708776	715082	721264	727328	733275	739109	744833	750451	56 1
2 8	32	702452	708882	715186	721366	727428	733373	739205	744928	750543	52 1
2 12	33	702560	708988	715290	721468	727528	733471	739302	745022	750636	48 1
2 16	34	702669	709094	715394	721570	727628	733569	739398	745117	750729	44 1
2 20	35	702777	709200	715498	721672	727726	733667	739494	745211	750821	40 1
2 24	36	702885	709306	715601	721774	727828	733765	739590	745306	750914	36 1
2 28	37	702993	709412	715705	721876	727928	733863	739686	745400	751007	32 1
2 32	38	703101	709518	715809	721978	728027	733961	739783	745494	751099	28 1
2 36	39	703209	709624	715913	722080	728127	734059	739879	745589	751192	24 1
2 40	40	703317	709730	716017	722181	728227	734157	739975	745683	751284	20 1
2 44	41	703425	709836	716120	722283	728327	734255	740071	745777	751377	16 1
2 48	42	703533	709941	716224	722385	728427	734353	740167	745871	751469	12 1
2 52	43	703641	710047	716328	722486	728526	734451	740263	745965	751561	8 1
2 56	44	703749	710153	716432	722588	728626	734548	740359	746059	751654	4 1
3 0	45	703856	710259	716535	722690	728726	734646	740455	746154	751746	0 1
3 4	46	703964	710364	716639	722791	728825	734744	740550	746248	751838	56 0
3 8	47	704072	710470	716742	722893	728925	734842	740646	746342	751931	52 0
3 12	48	704179	710575	716846	722994	729024	734939	740742	746436	752023	48 0
3 16	49	704287	710681	716949	723096	729124	735037	740838	746530	752115	44 0
3 20	50	704395	710786	717053	723197	729223	735134	740934	746624	752207	40 0
3 24	51	704502	710892	717156	723299	729323	735232	741029	746718	752300	36 0
3 28	52	704610	710997	717259	723400	729422	735330	741125	746811	752392	32 0
3 32	53	704717	711103	717363	723501	729522	735427	741221	746905	752484	28 0
3 36	54	704825	711208	717466	723603	729621	735525	741316	746999	752576	24 0
3 40	55	704932	711313	717569	723704	729720	735622	741412	747093	752668	20 0
3 44	56	705040	711419	717672	723805	729820	735719	741507	747187	752760	16 0
3 48	57	705147	711524	717776	723906	729919	735817	741603	747281	752852	12 0
3 52	58	705254	711629	717879	724007	730018	735914	741699	747374	752944	8 0
3 56	59	705362	711734	717982	724109	730117	736011	741794	747468	753036	4 0
4 0	60	705469	711839	718085	724210	730216	736109	741889	747562	753128	0 0
Time		56 ^m	52 ^m	48 ^m	44 ^m	40 ^m	36 ^m	32 ^m	28 ^m	24 ^m	Time

19 Hours.

19 Hours.

4 Hours.

Log. Havresines. (t)

5 Hours.

		36 ^m	40 ^m	44 ^m	48 ^m	52 ^m	56 ^m	5 ^h 0 ^m	4 ^m	8 ^m		
Time	Arc.	69°	70°	71°	72°	73°	74°	75°	76°	77°	Time	s
0 0	0	4.753128	4.758591	4.763954	4.769219	4.774388	4.779463	4.784447	4.789342	4.794150	0	4
0 4	1	753220	758681	764043	769306	774473	779547	784529	789423	794229	56	3
0 8	2	753312	758772	764131	769392	774558	779631	784612	789504	794308	52	3
0 12	3	753404	758862	764220	769479	774644	779714	784694	789584	794388	48	3
0 16	4	4.753495	4.758952	4.764308	4.769566	4.774729	4.779798	4.784776	4.789665	4.794467	44	3
0 20	5	753587	759042	764396	769653	774814	779882	784858	789746	794546	40	3
0 24	6	753679	759132	764485	769740	774899	779965	784941	789827	794626	36	3
0 28	7	753771	759222	764573	769827	774984	780049	785023	789907	794705	32	3
0 32	8	4.753862	4.759312	4.764662	4.769913	4.775070	4.780133	4.785105	4.789988	4.794784	28	3
0 36	9	753954	759402	764750	770000	775155	780216	785187	790069	794863	24	3
0 40	10	754046	759492	764838	770087	775240	780300	785269	790149	794942	20	3
0 44	11	754137	759582	764926	770173	775325	780384	785351	790230	795022	16	3
0 48	12	4.754229	4.759672	4.765015	4.770260	4.775410	4.780467	4.785433	4.790310	4.795101	12	3
0 52	13	754320	759762	765103	770347	775495	780551	785515	790391	795180	8	3
0 56	14	754412	759851	765191	770433	775580	780634	785597	790471	795259	4	3
1 0	15	754503	759941	765279	770520	775665	780717	785679	790552	795338	0	3
1 4	16	4.754595	4.760031	4.765367	4.770606	4.775750	4.780801	4.785761	4.790632	4.795417	56	2
1 8	17	754686	760121	765455	770693	775835	780884	785843	790713	795496	52	2
1 12	18	754778	760211	765544	770779	775920	780968	785925	790793	795575	48	2
1 16	19	754869	760300	765632	770866	776005	781051	786007	790874	795654	44	2
1 20	20	4.754960	4.760390	4.765720	4.770952	4.776090	4.781134	4.786089	4.790954	4.795733	40	2
1 24	21	755052	760480	765808	771039	776174	781218	786170	791034	795812	36	2
1 28	22	755143	760569	765896	771125	776259	781301	786252	791115	795891	32	2
1 32	23	755234	760659	765984	771211	776344	781384	786334	791195	795970	28	2
1 36	24	4.755326	4.760748	4.766071	4.771298	4.776429	4.781467	4.786416	4.791275	4.796049	24	2
1 40	25	755417	760838	766159	771384	776514	781551	786497	791356	796127	20	2
1 44	26	755508	760927	766247	771470	776598	781634	786579	791436	796206	16	2
1 48	27	755599	761017	766335	771556	776683	781717	786661	791516	796285	12	2
1 52	28	4.755690	4.761106	4.766423	4.771643	4.776768	4.781800	4.786742	4.791596	4.796364	8	2
1 56	29	755781	761196	766511	771729	776852	781883	786824	791676	796442	4	2
2 0	30	755872	761285	766598	771815	776937	781966	786906	791757	796521	0	2
2 4	31	755963	761374	766686	771901	777021	782049	786987	791837	796600	56	1
2 8	32	4.756054	4.761464	4.766774	4.771987	4.777106	4.782132	4.787069	4.791917	4.796679	52	1
2 12	33	756145	761553	766862	772073	777190	782215	787150	791997	796757	48	1
2 16	34	756236	761642	766949	772159	777275	782298	787232	792077	796836	44	1
2 20	35	756327	761732	767037	772245	777359	782381	787313	792157	796914	40	1
2 24	36	4.756418	4.761821	4.767124	4.772331	4.777444	4.782464	4.787395	4.792237	4.796993	36	1
2 28	37	756509	761910	767212	772417	777528	782547	787476	792317	797072	32	1
2 32	38	756600	761999	767300	772503	777613	782630	787559	792397	797150	28	1
2 36	39	756691	762088	767387	772589	777697	782713	787639	792477	797229	24	1
2 40	40	4.756781	4.762177	4.767475	4.772675	4.777781	4.782796	4.787720	4.792557	4.797307	20	1
2 44	41	756872	762267	767562	772761	777866	782879	787801	792636	797386	16	1
2 48	42	756963	762356	767649	772847	777950	782961	787883	792716	797464	12	1
2 52	43	757054	762445	767737	772933	778034	783044	787964	792796	797542	8	1
2 56	44	4.757144	4.762534	4.767824	4.773018	4.778119	4.783127	4.788045	4.792876	4.797621	4	1
3 0	45	757235	762623	767912	773104	778203	783209	788126	792956	797699	0	1
3 4	46	757326	762712	767999	773190	778287	783292	788208	793035	797777	56	0
3 8	47	757416	762800	768086	773276	778371	783375	788289	793115	797856	52	0
3 12	48	4.757507	4.762889	4.768173	4.773361	4.778455	4.783457	4.788370	4.793195	4.797934	48	0
3 16	49	757597	762978	768261	773447	778539	783540	788451	793275	798012	44	0
3 20	50	757688	763067	768348	773533	778623	783623	788532	793354	798091	40	0
3 24	51	757778	763156	768435	773616	778708	783705	788613	793434	798169	36	0
3 28	52	4.757869	4.763245	4.768522	4.773704	4.778792	4.783788	4.788694	4.793513	4.798247	32	0
3 32	53	757959	763333	768609	773789	778876	783870	788775	793593	798325	28	0
3 36	54	758049	763422	768697	773875	778960	783953	788856	793673	798403	24	0
3 40	55	758140	763511	768784	773960	779044	784035	788937	793752	798481	20	0
3 44	56	4.758230	4.763600	4.768871	4.774046	4.779127	4.784118	4.789018	4.793832	4.798560	16	0
3 48	57	758320	763688	768958	774131	779211	784200	789099	793911	798638	12	0
3 52	58	758411	763777	769045	774217	779295	784282	789180	793991	798716	8	0
3 56	59	758501	763865	769132	774302	779379	784365	789261	794070	798794	4	0
4 0	60	4.758591	4.763954	4.769219	4.774388	4.779463	4.784447	4.789342	4.794150	4.798872	0	0
		20 ^m	16 ^m	12 ^m	8 ^m	4 ^m	0 ^m 19 ^s	56 ^m	52 ^m	48 ^m		

19 Hours.

226

2 †

18 Hours.

5 Hours.

 $\frac{1}{2}$ Log. Haversines. (t)

5 Hours.

		12 ^m	16 ^m	20 ^m	24 ^m	28 ^m	32 ^m	36 ^m	40 ^m	44 ^m		
Time m	Arc. °	78°	79°	80°	81°	82°	83°	84°	85°	86°	Time m	Arc. °
		4.798872 4.798950 4.799028 4.799106	4.803510 803587 803664 803740	4.808067 808143 808218 808293	4.812544 812618 812692 812766	4.816943 817016 817088 817161	4.821265 821336 821407 821479	4.825511 825581 825651 825721	4.829683 829752 829821 829890	4.833783 833851 833919 833986		
0	0										0	4
0	4										4	8
0	8										8	12
0	12										12	16
0	16										16	20
0	20										20	24
0	24										24	28
0	28										28	32
0	32										32	36
0	36										36	40
0	40										40	44
0	44										44	48
0	48										48	52
0	52										52	56
0	56										56	60
1	0										60	0
1	4										4	4
1	8										8	8
1	12										12	12
1	16										16	16
1	20										20	20
1	24										24	24
1	28										28	28
1	32										32	32
1	36										36	36
1	40										40	40
1	44										44	44
1	48										48	48
2	0										52	52
2	4										56	56
2	8										60	60
2	12										0	4
2	16										4	8
2	20										8	12
2	24										12	16
2	28										16	20
2	32										20	24
2	36										24	28
2	40										28	32
2	44										32	36
2	48										36	40
3	0										40	44
3	4										44	48
3	8										48	52
3	12										52	56
3	16										56	60
3	20										0	4
3	24										4	8
3	28										8	12
3	32										12	16
3	36										16	20
3	40										20	24
3	44										24	28
3	48										28	32
4	0										32	36
4	4										36	40
4	8										40	44
4	12										44	48
4	16										48	52
4	20										52	56
4	24										56	60
4	28										0	4
4	32										4	8
4	36										8	12
4	40										12	16
4	44										16	20
4	48										20	24
5	0										24	28
5	4										28	32
5	8										32	36
5	12										36	40
5	16										40	44
5	20										44	48
5	24										48	52
5	28										52	56
5	32										56	60
5	36										0	4
5	40										4	8
5	44										8	12
5	48										12	16
6	0										16	20
6	4										20	24
6	8										24	28
6	12										28	32
6	16										32	36
6	20										36	40
6	24										40	44
6	28										44	48
6	32										48	52
6	36										52	56
6	40										56	60
6	44										0	4
6	48										4	8
7	0										8	12
7	4										12	16
7	8										16	20
7	12										20	24
7	16										24	28
7	20										28	32
7	24										32	36
7	28										36	40
7	32										40	44
7	36										44	48
7	40										48	52
7	44										52	56
7	48										56	60
8	0										0	4
8	4										4	8
8	8										8	12
8	12										12	16
8	16										16	20
8	20										20	24
8	24										24	28
8	28										28	32
8	32										32	36
8	36										36	40
8	40										40	44
8	44										44	48
8	48										48	52
9	0										52	56
9	4										56	60
9	8										0	4
9	12										4	8
9	16										8	12
9	20										12	16
9	24										16	20
9	28										20	24
9	32										24	28
9	36										28	32
9	40										32	36
9	44										36	40
9	48										40	44
10	0										44	48
10	4										48	52
10	8										52	56
10	12										56	60
10	16										0	4
10	20										4	8
10	24										8	12
10	28										12	16
10	32										16	20
10	36										20	24
10	40										24	28
10	44										28	32
10	48										32	36
11	0										36	40
11	4										40	44
11	8										44	48
11	12										48	52
11	16										52	56
11	20										56	60
11	24										0	4
11	28										4	8
11	32										8	12
11	36										12	16
11	40										16	20
11	44										20	24
11	48										24	28
12	0										28	32
12	4										32	36
12	8										36	40
12	12										40	44
12	16										44	48
12	20										48	52
12	24										52	56
12	28										56	60
12	32										0	4
12	36										4	8
12	40										8	12
12	44										12	16
12	48										16	

5 Hours.

Log. Havermaea. (t)

6 Hours.

Time m s	Arc. °	48 ^m	52 ^m	56 ^m	6 ^h 0 ^m	4 ^m	8 ^m	12 ^m	16 ^m	20 ^m	Time m s
		87°	88°	89°	90°	91°	92°	93°	94°	95°	
0 0	0	4.837812	4.841771	4.845662	4.849485	4.853242	4.856934	4.860562	4.864127	4.867631	0 4
0 4	1	837879	841837	845726	849548	853304	856995	860622	864186	867689	56 3
0 8	2	837945	841902	845790	849611	853366	857056	860682	864245	867747	52 3
0 12	3	838012	841967	845854	849674	853428	857117	860742	864304	867804	48 3
0 16	4	838078	842033	845919	849737	853490	857178	860802	864363	867862	44 3
0 20	5	838145	842098	845983	849801	853552	857239	860862	864422	867920	40 3
0 24	6	838211	842163	846047	849864	853614	857300	860921	864481	867978	36 3
0 28	7	838278	842229	846111	849927	853676	857361	860981	864539	868036	32 3
0 32	8	838344	842294	846175	849990	853738	857421	861041	864598	868093	28 3
0 36	9	838410	842359	846239	850053	853800	857482	861101	864657	868151	24 3
0 40	10	838477	842424	846304	850116	853862	857543	861161	864716	868209	20 3
0 44	11	838543	842490	846368	850179	853924	857604	861220	864774	868266	16 3
0 48	12	838610	842555	846432	850242	853986	857665	861280	864833	868324	12 3
0 52	13	838676	842620	846496	850305	854047	857726	861340	864892	868382	8 3
0 56	14	838742	842685	846560	850367	854109	857786	861400	864950	868440	4 3
1 0	15	838808	842750	846624	850430	854171	857847	861459	865009	868497	0 3
1 4	16	838875	842815	846688	850493	854233	857908	861519	865068	868555	56 2
1 8	17	838941	842880	846752	850556	854295	857968	861579	865126	868612	52 2
1 12	18	839007	842945	846816	850619	854356	858029	861638	865185	868670	48 2
1 16	19	839073	843011	846880	850682	854418	858090	861698	865243	868728	44 2
1 20	20	839140	843076	846944	850745	854480	858150	861758	865302	868785	40 2
1 24	21	839206	843141	847007	850807	854542	858211	861817	865361	868843	36 2
1 28	22	839272	843206	847071	850870	854603	858272	861877	865419	868900	32 2
1 32	23	839338	843271	847135	850933	854665	858332	861936	865478	868958	28 2
1 36	24	839404	843336	847199	850996	854727	858393	861996	865536	869015	24 2
1 40	25	839470	843401	847263	851058	854788	858453	862055	865595	869073	20 2
1 44	26	839536	843465	847327	851121	854850	858514	862115	865653	869130	16 2
1 48	27	839602	843530	847390	851184	854911	858575	862174	865712	869187	12 2
1 52	28	839668	843595	847454	851246	854973	858635	862234	865770	869245	8 2
1 56	29	839734	843660	847518	851309	855035	858696	862293	865828	869302	4 2
2 0	30	839800	843725	847582	851372	855096	858756	862353	865887	869360	0 2
2 4	31	839866	843790	847645	851434	855158	858816	862412	865945	869417	56 1
2 8	32	839932	843855	847709	851497	855219	858877	862471	866004	869474	52 1
2 12	33	839998	843919	847773	851559	855281	858937	862531	866062	869532	48 1
2 16	34	840064	843984	847836	851622	855342	858998	862590	866120	869589	44 1
2 20	35	840130	844049	847900	851685	855404	859058	862649	866179	869646	40 1
2 24	36	840196	844114	847964	851747	855465	859119	862709	866237	869704	36 1
2 28	37	840262	844178	848027	851810	855526	859179	862768	866295	869761	32 1
2 32	38	840328	844243	848091	851872	855588	859239	862827	866353	869818	28 1
2 36	39	840393	844308	848154	851934	855649	859300	862887	866412	869875	24 1
2 40	40	840459	844372	848218	851997	855711	859360	862946	866470	869933	20 1
2 44	41	840525	844437	848281	852059	855772	859420	863005	866528	870000	16 1
2 48	42	840591	844502	848345	852122	855833	859480	863064	866586	870047	12 1
2 52	43	840656	844566	848408	852184	855894	859541	863124	866644	870104	8 1
2 56	44	840722	844631	848472	852247	855956	859601	863183	866703	870161	4 1
3 0	45	840788	844695	848535	852309	856017	859661	863242	866761	870218	0 1
3 4	46	840854	844760	848599	852371	856078	859721	863301	866819	870276	56 0
3 8	47	840919	844825	848662	852434	856140	859781	863360	866877	870333	52 0
3 12	48	840985	844889	848726	852496	856201	859842	863419	866935	870390	48 0
3 16	49	841051	844954	848789	852558	856262	859902	863478	866993	870447	44 0
3 20	50	841116	845018	848852	852620	856323	859962	863538	867051	870504	40 0
3 24	51	841182	845082	848916	852683	856384	860022	863597	867109	870561	36 0
3 28	52	841247	845147	848979	852745	856445	860082	863656	867167	870618	32 0
3 32	53	841313	845211	849042	852807	856507	860142	863715	867225	870675	28 0
3 36	54	841378	845276	849106	852869	856568	860202	863774	867283	870732	24 0
3 40	55	841444	845340	849169	852931	856630	860262	863833	867341	870789	20 0
3 44	56	841509	845404	849232	852994	856690	860322	863892	867399	870846	16 0
3 48	57	841575	845469	849295	853056	856751	860382	863951	867457	870903	12 0
3 52	58	841640	845533	849359	853118	856812	860442	864010	867515	870960	8 0
3 56	59	841706	845597	849422	853180	856873	860502	864069	867573	871017	4 0
4 0	60	841771	845662	849485	853242	856934	860562	864127	867631	871073	0 0
Time		8 ^m	4 ^m	0 ^m 18 ^s	56 ^m	52 ^m	48 ^m	44 ^m	40 ^m	36 ^m	Time

18 Hours.

227

17 Hours.

6 Hours.

 $\frac{1}{2}$ Log. Haversines. (1)

6 Hours.

		24 ^m	28 ^m	32 ^m	36 ^m	40 ^m	44 ^m	48 ^m	52 ^m	56 ^m		
Time	Arc.	96°	97°	98°	99°	100°	101°	102°	103°	104°	Time	Arc.
0 0	0	4.871073	4.874456	4.877780	4.881045	4.884254	4.887406	4.890503	4.893544	4.896532	0 4	0
0 4	1	871130	874512	877835	881099	884307	887458	890554	893595	896581	0 8	1
0 8	2	871187	874568	877890	881153	884360	887510	890605	893645	896631	0 12	2
0 12	3	871244	874624	877944	881207	884413	887562	890656	893695	896680	0 16	3
0 16	4	871301	874680	877999	881261	884466	887614	890707	893745	896729	0 20	4
0 20	5	871358	874735	878054	881315	884519	887666	890758	893795	896779	0 24	5
0 24	6	871414	874791	878109	881369	884572	887718	890809	893846	896828	0 28	6
0 28	7	871471	874847	878164	881423	884625	887770	890860	893896	896877	0 32	7
0 32	8	871528	874903	878219	881477	884677	887822	890911	893946	896926	0 36	8
0 36	9	871585	874958	878273	881530	884730	887874	890962	893996	896976	0 40	9
0 40	10	871641	875014	878328	881584	884783	887926	891013	894046	897025	0 44	10
0 44	11	871698	875070	878383	881638	884836	887978	891064	894096	897074	0 48	11
0 48	12	871755	875126	878438	881692	884889	888030	891115	894146	897123	0 52	12
0 52	13	871811	875181	878492	881745	884942	888082	891166	894196	897172	0 56	13
0 56	14	871868	875237	878547	881799	884994	888133	891217	894246	897222	1 0	14
1 0	15	871925	875293	878602	881853	885047	888185	891268	894296	897271	1 4	15
1 4	16	871981	875348	878656	881907	885100	888237	891319	894346	897320	1 8	16
1 8	17	872038	875404	878711	881960	885153	888289	891370	894396	897369	1 12	17
1 12	18	872094	875459	878766	882014	885205	888341	891421	894446	897418	1 16	18
1 16	19	872151	875515	878820	882068	885258	888393	891472	894496	897467	1 20	19
1 20	20	872208	875571	878875	882121	885311	888444	891523	894546	897516	1 24	20
1 24	21	872264	875626	878929	882175	885364	888496	891573	894596	897565	1 28	21
1 28	22	872321	875682	878984	882228	885416	888548	891624	894646	897614	1 32	22
1 32	23	872377	875737	879038	882282	885469	888600	891675	894696	897663	1 36	23
1 36	24	872434	875793	879093	882336	885521	888651	891726	894746	897712	1 40	24
1 40	25	872490	875848	879148	882389	885574	888703	891777	894796	897761	1 44	25
1 44	26	872547	875904	879202	882443	885627	888755	891827	894846	897810	1 48	26
1 48	27	872603	875959	879256	882496	885679	888806	891878	894895	897859	1 52	27
1 52	28	872659	876014	879311	882550	885732	888858	891929	894945	897908	1 56	28
1 56	29	872716	876070	879365	882603	885784	888910	891980	894995	897957	2 0	29
2 0	30	872772	876125	879420	882657	885837	888961	892030	895045	898006	2 4	30
2 4	31	872829	876181	879474	882710	885889	889013	892081	895095	898055	2 8	31
2 8	32	872885	876236	879529	882764	885942	889064	892132	895144	898104	2 12	32
2 12	33	872941	876291	879583	882817	885994	889116	892182	895194	898153	2 16	33
2 16	34	872998	876347	879637	882871	886047	889167	892233	895244	898202	2 20	34
2 20	35	873054	876402	879692	882924	886099	889219	892284	895294	898250	2 24	35
2 24	36	873110	876457	879746	882977	886152	889271	892334	895343	898299	2 28	36
2 28	37	873166	876513	879800	883031	886204	889322	892385	895393	898348	2 32	37
2 32	38	873223	876568	879855	883084	886257	889374	892435	895443	898397	2 36	38
2 36	39	873279	876623	879909	883137	886309	889425	892486	895492	898446	2 40	39
2 40	40	873335	876678	879963	883191	886362	889476	892536	895542	898494	2 44	40
2 44	41	873391	876734	880018	883244	886414	889528	892587	895592	898543	2 48	41
2 48	42	873448	876789	880072	883297	886466	889579	892637	895641	898592	2 52	42
2 52	43	873504	876844	880126	883351	886519	889631	892688	895691	898641	2 56	43
2 56	44	873560	876899	880180	883404	886571	889682	892738	895741	898689	3 0	44
3 0	45	873616	876954	880234	883457	886623	889734	892789	895790	898738	3 4	45
3 4	46	873672	877010	880289	883510	886676	889785	892839	895840	898787	3 8	46
3 8	47	873728	877065	880343	883564	886728	889836	892890	895889	898835	3 12	47
3 12	48	873784	877120	880397	883617	886780	889888	892940	895939	898884	3 16	48
3 16	49	873840	877175	880451	883670	886832	889939	892991	895988	898933	3 20	49
3 20	50	873896	877230	880505	883723	886885	889990	893041	896038	898981	3 24	50
3 24	51	873952	877285	880559	883776	886937	890042	893092	896087	899030	3 28	51
3 28	52	874008	877340	880613	883829	886989	890093	893142	896137	899078	3 32	52
3 32	53	874065	877395	880667	883883	887041	890144	893192	896186	899126	3 36	53
3 36	54	874120	877450	880721	883936	887093	890195	893243	896235	899174	3 40	54
3 40	55	874176	877505	880776	883989	887145	890247	893293	896285	899224	3 44	55
3 44	56	874232	877560	880830	884042	887198	890298	893343	896335	899273	3 48	56
3 48	57	874288	877615	880884	884095	887250	890349	893394	896384	899321	3 52	57
3 52	58	874344	877670	880938	884148	887302	890400	893444	896433	899370	3 56	58
3 56	59	874400	877725	880992	884201	887354	890451	893494	896483	899418	4 0	59
4 0	60	874456	877780	881045	884254	887406	890503	893544	896532	899467	4 4	60
Time		32 ^m	28 ^m	24 ^m	20 ^m	16 ^m	12 ^m	8 ^m	4 ^m	0 ^m 17 ^s	Time	

17 Hours.

17 Hours.

7 Hours.

 $\frac{1}{2}$ Log. Haversines. (6)

7 Hours.

	0 ^m	4 ^m	8 ^m	12 ^m	16 ^m	20 ^m	24 ^m	28 ^m	32 ^m	
Time	105°	106°	107°	108°	109°	110°	111°	112°	113°	Time
0	4.899467	4.902349	4.905179	4.907958	4.910686	4.913364	4.915994	4.918574	4.921107	0
1	899515	902396	905225	908003	910731	913409	916037	918617	921148	1
2	899564	902444	905272	908049	910776	913453	916080	918659	921190	2
3	899612	902491	905319	908095	910821	913497	916124	918702	921232	3
4	4.899660	4.902539	4.905366	4.908141	4.910866	4.913541	4.916167	4.918744	4.921274	4
5	899709	902586	905412	908187	910911	913585	916211	918787	921315	5
6	899757	902634	905459	908233	910956	913630	916254	918830	921357	6
7	899806	902681	905506	908278	911001	913674	916297	918872	921399	7
8	4.899854	4.902729	4.905552	4.908324	4.911046	4.913718	4.916341	4.918915	4.921441	8
9	899902	902776	905599	908370	911091	913762	916384	918957	921482	9
10	899951	902824	905645	908416	911136	913806	916427	919000	921524	10
11	899999	902871	905692	908462	911181	913850	916470	919042	921566	11
12	4.900047	4.902919	4.905739	4.908507	4.911226	4.913894	4.916514	4.919084	4.921607	12
13	900095	902966	905785	908553	911271	913938	916557	919127	921649	13
14	900144	903014	905832	908599	911315	913982	916600	919169	921691	14
15	900192	903061	905878	908644	911360	914026	916643	919212	921732	15
16	4.900240	4.903108	4.905925	4.908690	4.911405	4.914070	4.916687	4.919254	4.921774	16
17	900288	903156	905971	908736	911450	914114	916730	919297	921815	17
18	900337	903203	906018	908781	911495	914158	916773	919339	921857	18
19	900385	903250	906064	908827	911540	914202	916816	919381	921899	19
20	4.900433	4.903298	4.906111	4.908873	4.911584	4.914246	4.916859	4.919424	4.921940	20
21	900481	903345	906157	908918	911629	914290	916902	919466	921982	21
22	900529	903392	906204	908964	911674	914334	916945	919508	922023	22
23	900578	903440	906250	909009	911719	914378	916989	919551	922065	23
24	4.900626	4.903487	4.906296	4.909055	4.911763	4.914422	4.917032	4.919593	4.922106	24
25	900674	903534	906343	909101	911808	914466	917075	919635	922148	25
26	900722	903581	906389	909146	911853	914510	917118	919677	922189	26
27	900770	903628	906435	909192	911897	914554	917161	919720	922231	27
28	4.900818	4.903676	4.906482	4.909237	4.911942	4.914598	4.917204	4.919762	4.922272	28
29	900866	903723	906528	909283	911987	914641	917247	919804	922313	29
30	900914	903770	906574	909328	912031	914685	917290	919846	922355	30
31	900962	903817	906621	909374	912076	914729	917333	919883	922396	31
32	4.901010	4.903864	4.906667	4.909419	4.912121	4.914773	4.917376	4.919931	4.922438	32
33	901058	903911	906713	909464	912165	914817	917419	919973	922479	33
34	901106	903959	906760	909510	912210	914860	917462	920015	922520	34
35	901154	904006	906806	909555	912254	914904	917505	920057	922562	35
36	4.901202	4.904053	4.906852	4.909601	4.912299	4.914948	4.917548	4.920099	4.922603	36
37	901250	904100	906898	909646	912344	914992	917591	920141	922644	37
38	901298	904147	906945	909691	912388	915035	917634	920184	922686	38
39	901346	904194	906991	909737	912433	915079	917676	920226	922727	39
40	4.901394	4.904241	4.907037	4.909782	4.912477	4.915123	4.917719	4.920268	4.922768	40
41	901442	904288	907083	909827	912522	915166	917762	920310	922810	41
42	901489	904335	907129	909873	912566	915210	917805	920352	922851	42
43	901537	904382	907175	909918	912611	915254	917848	920394	922892	43
44	4.901585	4.904429	4.907222	4.909963	4.912655	4.915297	4.917891	4.920437	4.922933	44
45	901633	904476	907268	910009	912699	915341	917934	920478	922975	45
46	901681	904523	907314	910054	912744	915385	917976	920520	923016	46
47	901729	904570	907360	910099	912788	915428	918019	920562	923057	47
48	4.901776	4.904617	4.907406	4.910144	4.912833	4.915472	4.918062	4.920604	4.923098	48
49	901824	904664	907452	910190	912877	915515	918105	920646	923139	49
50	901872	904711	907498	910235	912921	915559	918147	920688	923180	50
51	901920	904757	907544	910280	912966	915602	918190	920730	923222	51
52	4.901967	4.904804	4.907590	4.910325	4.913010	4.915646	4.918233	4.920772	4.923263	52
53	902015	904851	907636	910370	913055	915689	918276	920814	923304	53
54	902063	904898	907682	910415	913099	915733	918318	920856	923345	54
55	902110	904945	907728	910461	913143	915776	918361	920897	923386	55
56	4.902158	4.904992	4.907774	4.910506	4.913187	4.915820	4.918404	4.920939	4.923427	56
57	902206	905038	907820	910551	913232	915863	918446	920981	923468	57
58	902253	905085	907866	910596	913276	915907	918489	921023	923509	58
59	902301	905132	907912	910641	913320	915950	918532	921065	923550	59
60	4.902349	4.905179	4.907958	4.910686	4.913364	4.915994	4.918574	4.921107	4.923591	60
	56 ^m	52 ^m	48 ^m	44 ^m	40 ^m	36 ^m	32 ^m	28 ^m	24 ^m	Time

16 Hours.

228

16 Hours.

7 Hours.

Log. Haversines. (4)

8 Hours.

Time m s	Arc. '	36"	40"	44"	48"	52"	56"	8 ^b 0"	4"	8"	Time m s
		114°	115°	116°	117°	118°	119°	120°	121°	122°	
0 0	0	4.923591	4.926029	4.928420	4.930766	4.933066	4.935320	4.937531	4.939697	4.941819	0 4
0 4	1	923632	926069	928460	930804	933103	935358	937567	939732	941854	56 3
0 8	2	923673	926110	928499	930843	933141	935395	937603	939768	941889	52 3
0 12	3	923714	926150	928539	930882	933179	935432	937640	939804	941924	48 3
0 16	4	4.923755	4.926190	4.928578	4.930920	4.933217	4.935469	4.937676	4.939840	4.941959	44 3
0 20	5	923796	926230	928618	930959	933255	935506	937713	939875	941994	40 3
0 24	6	923837	926270	928657	930998	933293	935543	937749	939911	942029	36 3
0 28	7	923878	926311	928696	931036	933331	935580	937786	939947	942064	32 3
0 32	8	4.923919	4.926351	4.928736	4.931075	4.933369	4.935618	4.937822	4.939982	4.942099	28 3
0 36	9	923960	926391	928775	931114	933407	935655	937858	940018	942134	24 3
0 40	10	924001	926431	928814	931152	933444	935692	937895	940053	942169	20 3
0 44	11	924042	926471	928854	931191	933482	935729	937931	940089	942204	16 3
0 48	12	4.924083	4.926511	4.928893	4.931229	4.933520	4.935766	4.937967	4.940125	4.942239	12 3
0 52	13	924124	926551	928932	931268	933558	935803	938004	940160	942273	8 3
0 56	14	924164	926591	928972	931306	933596	935840	938040	940196	942308	4 3
1 0	15	924205	926631	929011	931345	933633	935877	938076	940231	942343	0 3
1 4	16	4.924246	4.926671	4.929050	4.931383	4.933671	4.935914	4.938113	4.940267	4.942378	56 2
1 8	17	924287	926711	929090	931422	933709	935951	938149	940303	942413	52 2
1 12	18	924328	926751	929129	931460	933747	935988	938185	940338	942448	48 2
1 16	19	924368	926791	929168	931499	933784	936025	938221	940374	942482	44 2
1 20	20	4.924409	4.926831	4.929207	4.931537	4.933822	4.936062	4.938258	4.940409	4.942517	40 2
1 24	21	924450	926871	929246	931576	933860	936099	938294	940445	942552	36 2
1 28	22	924491	926911	929286	931614	933898	936136	938330	940480	942587	32 2
1 32	23	924531	926951	929325	931653	933935	936173	938366	940515	942621	28 2
1 36	24	4.924572	4.926991	4.929364	4.931691	4.933973	4.936210	4.938402	4.940551	4.942656	24 2
1 40	25	924613	927031	929403	931729	934010	936247	938438	940586	942691	20 2
1 44	26	924653	927071	929442	931768	934048	936284	938475	940622	942725	16 2
1 48	27	924694	927111	929481	931806	934086	936320	938511	940657	942760	12 2
1 52	28	4.924735	4.927151	4.929521	4.931845	4.934123	4.936357	4.938547	4.940693	4.942795	8 2
1 56	29	924775	927191	929560	931883	934161	936394	938583	940728	942830	4 2
2 0	30	924816	927231	929599	931921	934199	936431	938619	940763	942864	0 2
2 4	31	924857	927270	929638	931960	934236	936468	938655	940799	942899	56 1
2 8	32	4.924897	4.927310	4.929677	4.931998	4.934274	4.936505	4.938691	4.940834	4.942933	52 1
2 12	33	924938	927350	929716	932036	934311	936541	938727	940869	942968	48 1
2 16	34	924979	927390	929755	932075	934349	936578	938763	940905	943003	44 1
2 20	35	925019	927430	929794	932113	934386	936615	938799	940940	943037	40 1
2 24	36	4.925060	4.927469	4.929833	4.932151	4.934424	4.936652	4.938836	4.940975	4.943072	36 1
2 28	37	925100	927509	929872	932189	934461	936689	938872	941011	943106	32 1
2 32	38	925141	927549	929911	932228	934499	936725	938908	941046	943141	28 1
2 36	39	925181	927589	929950	932266	934536	936762	938944	941081	943176	24 1
2 40	40	4.925222	4.927628	4.929989	4.932304	4.934574	4.936799	4.938980	4.941117	4.943210	20 1
2 44	41	925262	927668	930028	932342	934611	936835	939016	941152	943245	16 1
2 48	42	925303	927708	930067	932380	934649	936872	939051	941187	943279	12 1
2 52	43	925343	927748	930106	932419	934686	936909	939087	941222	943314	8 1
2 56	44	4.925384	4.927787	4.930145	4.932457	4.934723	4.936946	4.939123	4.941257	4.943348	4 1
3 0	45	925424	927827	930184	932495	934761	936982	939159	941293	943383	0 1
3 4	46	925465	927867	930223	932533	934798	937019	939195	941328	943417	56 0
3 8	47	925505	927906	930261	932571	934836	937055	939231	941363	943452	52 0
3 12	48	4.925545	4.927946	4.930300	4.932609	4.934873	4.937092	4.939267	4.941398	4.943486	48 0
3 16	49	925586	927985	930339	932647	934910	937129	939303	941433	943520	44 0
3 20	50	925626	928025	930378	932685	934948	937165	939339	941468	943555	40 0
3 24	51	925666	928065	930417	932723	934985	937202	939375	941504	943589	36 0
3 28	52	4.925707	4.928104	4.930456	4.932762	4.935022	4.937238	4.939410	4.941539	4.943624	32 0
3 32	53	925747	928144	930494	932800	935060	937275	939446	941574	943658	28 0
3 36	54	925787	928183	930533	932838	935097	937312	939482	941609	943692	24 0
3 40	55	925828	928223	930572	932876	935134	937348	939518	941644	943727	20 0
3 44	56	4.925868	4.928262	4.930611	4.932914	4.935171	4.937385	4.939554	4.941679	4.943761	16 0
3 48	57	925908	928302	930650	932952	935209	937421	939589	941714	943796	12 0
3 52	58	925949	928341	930688	932990	935246	937458	939625	941749	943830	8 0
3 56	59	925989	928381	930727	933028	935283	937494	939661	941784	943864	4 0
4 0	60	4.926029	4.928420	4.930766	4.933066	4.935320	4.937531	4.939697	4.941819	4.943898	0 0
Time		20"	16"	12"	8"	4"	0" 16"	56"	52"	48"	Time

10 Hours.

15 Hours.

8 Hours.

Log. Haversines. (i)

8 Hours.

Time m	Arc, °	12 ^m	16 ^m	20 ^m	24 ^m	28 ^m	32 ^m	36 ^m	40 ^m	44 ^m	Time s m
		123°	124°	125°	126°	127°	128°	129°	130°	131°	
0 0	0	4.943898	4.945935	4.947929	4.949881	4.951791	4.953660	4.955488	4.957276	4.959023	0 4
0 4	1	943933	945968	947962	949913	951823	953691	955518	957305	959052	56 3
0 8	2	943967	946002	947995	949945	951854	953722	955548	957335	959080	52 3
0 12	3	944001	946036	948027	949977	951886	953753	955579	957364	959109	48 3
0 16	4	4.944036	4.946069	4.948060	4.950009	4.951917	4.953783	4.955609	4.957393	4.959138	44 3
0 20	5	944070	946103	948093	950042	951948	953814	955639	957423	959167	40 3
0 24	6	944104	946136	948126	950074	951980	953845	955669	957452	959195	36 3
0 28	7	944138	946170	948159	950106	952011	953876	955699	957482	959224	32 3
0 32	8	4.944172	4.946203	4.948192	4.950138	4.952043	4.953906	4.955729	4.957511	4.959253	28 3
0 36	9	944207	946237	948224	950170	952074	953937	955759	957540	959281	24 3
0 40	10	944241	946270	948257	950202	952105	953968	955789	957570	959310	20 3
0 44	11	944275	946304	948290	950234	952137	953998	955819	957599	959339	16 3
0 48	12	4.944309	4.946337	4.948323	4.950266	4.952168	4.954029	4.955849	4.957628	4.959367	12 3
0 52	13	944343	946370	948355	950298	952200	954060	955879	957658	959396	8 3
0 56	14	944377	946404	948388	950330	952231	954090	955909	957687	959425	4 3
1 0	15	944412	946437	948421	950362	952262	954121	955939	957716	959453	0 3
1 4	16	4.944446	4.946471	4.948453	4.950394	4.952294	4.954152	4.955969	4.957746	4.959482	56 2
1 8	17	944480	946504	948486	950426	952325	954182	955999	957775	959511	52 2
1 12	18	944514	946538	948519	950458	952356	954213	956029	957804	959539	48 2
1 16	19	944548	946571	948552	950490	952387	954243	956059	957833	959568	44 2
1 20	20	4.944582	4.946604	4.948584	4.950522	4.952419	4.954274	4.956089	4.957863	4.959596	40 2
1 24	21	944616	946638	948617	950554	952450	954305	956118	957892	959625	36 2
1 28	22	944650	946671	948649	950586	952481	954335	956148	957921	959653	32 2
1 32	23	944684	946704	948682	950618	952512	954366	956178	957950	959682	28 2
1 36	24	4.944718	4.946738	4.948715	4.950650	4.952544	4.954396	4.956208	4.957979	4.959711	24 2
1 40	25	944752	946771	948747	950682	952575	954427	956238	958009	959739	20 2
1 44	26	944786	946804	948780	950714	952606	954457	956268	958038	959768	16 2
1 48	27	944820	946837	948812	950746	952637	954488	956298	958067	959796	12 2
1 52	28	4.944854	4.946871	4.948845	4.950777	4.952668	4.954518	4.956327	4.958096	4.959825	8 2
1 56	29	944888	946904	948878	950809	952700	954549	956357	958125	959853	4 2
2 0	30	944922	946937	948910	950841	952731	954579	956387	958152	959881	0 2
2 4	31	944956	946970	948943	950873	952762	954610	956417	958183	959910	56 1
2 8	32	4.944990	4.947004	4.948975	4.950905	4.952793	4.954640	4.956447	4.958212	4.959938	52 1
2 12	33	945024	947037	949008	950937	952824	954671	956476	958242	959967	48 1
2 16	34	945058	947070	949040	950968	952855	954701	956506	958271	959995	44 1
2 20	35	945092	947103	949073	951000	952886	954731	956536	958300	960024	40 1
2 24	36	4.945125	4.947136	4.949105	4.951032	4.952917	4.954762	4.956566	4.958329	4.960052	36 1
2 28	37	945159	947169	949138	951064	952949	954792	956595	958358	960080	32 1
2 32	38	945193	947202	949170	951096	952980	954823	956625	958387	960109	28 1
2 36	39	945227	947236	949202	951127	953011	954853	956655	958416	960137	24 1
2 40	40	4.945261	4.947269	4.949235	4.951159	4.953042	4.954883	4.956684	4.958445	4.960165	20 1
2 44	41	945295	947302	949267	951191	953073	954914	956714	958474	960194	16 1
2 48	42	945328	947335	949300	951222	953104	954944	956744	958503	960222	12 1
2 52	43	945362	947368	949332	951254	953135	954974	956773	958532	960250	8 1
2 56	44	4.945396	4.947401	4.949364	4.951286	4.953166	4.955005	4.956803	4.958561	4.960279	4 1
3 0	45	945430	947434	949397	951317	953197	955035	956833	958590	960307	0 1
3 4	46	945464	947467	949429	951349	953228	955065	956862	958619	960335	56 0
3 8	47	945497	947500	949461	951381	953259	955096	956892	958648	960364	52 0
3 12	48	4.945531	4.947533	4.949494	4.951412	4.953290	4.955126	4.956921	4.958677	4.960392	48 0
3 16	49	945565	947566	949526	951444	953321	955156	956951	958706	960420	44 0
3 20	50	945598	947600	949558	951476	953351	955186	956981	958734	960448	40 0
3 24	51	945632	947632	949591	951507	953382	955217	957010	958763	960477	36 0
3 28	52	4.945666	4.947665	4.949623	4.951539	4.953413	4.955247	4.957040	4.958792	4.960505	32 0
3 32	53	945699	947698	949655	951570	953444	955277	957069	958821	960533	28 0
3 36	54	945733	947731	949688	951602	953475	955307	957099	958850	960561	24 0
3 40	55	945767	947764	949720	951634	953506	955337	957128	958879	960589	20 0
3 44	56	4.945800	4.947797	4.949752	4.951665	4.953537	4.955368	4.957158	4.958908	4.960618	16 0
3 48	57	945834	947830	949784	951697	953568	955398	957187	958936	960646	12 0
3 52	58	945868	947863	949816	951728	953598	955428	957217	958965	960674	8 0
3 56	59	945901	947896	949849	951760	953629	955458	957246	958994	960702	4 0
4 0	60	4.945935	4.947929	4.949881	4.951791	4.953660	4.955488	4.957276	4.959023	4.960730	0 0
		44 ^m	40 ^m	36 ^m	32 ^m	28 ^m	24 ^m	20 ^m	16 ^m	12 ^m	Time m

15 Hours.

229

15 Hours.

8 Hours

Log. Haversines. (t)

9 Hours

Time m s	Arc.	48 ^m	52 ^m	56 ^m	9 ^h 0 ^m	4 ^m	8 ^m	12 ^m	16 ^m	Arc.	Time s m
		132°	133°	134°	135°	136°	137°	138°	139°		
0 0	0	4.960730	4.962398	4.964026	4.965615	4.967166	4.968678	4.970152	4.971588	60	0 4
0 4	1	960758	962425	964053	965641	967191	968703	970176	971611	59	56 3
0 8	2	960786	962453	964080	965668	967217	968728	970200	971635	58	52 3
0 12	3	960814	962480	964106	965694	967242	968752	970224	971658	57	48 3
0 16	4	4.960843	4.962508	4.964133	4.965720	4.967268	4.968777	4.970249	4.971682	56	44 3
0 20	5	960871	962535	964160	965746	967293	968802	970273	971706	55	40 3
0 24	6	960899	962562	964187	965772	967319	968827	970297	971729	54	36 3
0 28	7	960927	962590	964213	965798	967344	968852	970321	971753	53	32 3
0 32	8	4.960955	4.962617	4.964240	4.965824	4.967370	4.968877	4.970345	4.971776	52	28 3
0 36	9	960983	962644	964267	965850	967395	968901	970369	971800	51	24 3
0 40	10	961011	962672	964294	965876	967420	968926	970394	971823	50	20 3
0 44	11	961039	962699	964320	965902	967446	968951	970418	971847	49	16 3
0 48	12	4.961067	4.962727	4.964347	4.965928	4.967471	4.968976	4.970442	4.971870	48	12 3
0 52	13	961095	962754	964374	965955	967497	969000	970466	971894	47	8 3
0 56	14	961123	962781	964400	965981	967522	969025	970490	971917	46	4 3
1 0	15	961151	962808	964427	966007	967547	969050	970514	971941	45	0 3
1 4	16	4.961179	4.962836	4.964454	4.966033	4.967573	4.969075	4.970538	4.971964	44	56 2
1 8	17	961207	962863	964480	966059	967598	969099	970562	971988	43	52 2
1 12	18	961235	962890	964507	966085	967623	969124	970586	972011	42	48 2
1 16	19	961262	962918	964534	966110	967649	969149	970610	972034	41	44 2
1 20	20	4.961290	4.962945	4.964560	4.966136	4.967674	4.969173	4.970635	4.972058	40	40 2
1 24	21	961318	962972	964587	966162	967699	969198	970659	972081	39	36 2
1 28	22	961346	962999	964613	966188	967725	969223	970683	972105	38	32 2
1 32	23	961374	963027	964640	966214	967750	969247	970707	972128	37	28 2
1 36	24	4.961402	4.963054	4.964666	4.966240	4.967775	4.969272	4.970731	4.972151	36	24 2
1 40	25	961430	963081	964693	966266	967800	969297	970755	972175	35	20 2
1 44	26	961458	963108	964719	966292	967826	969321	970779	972198	34	16 2
1 48	27	961485	963135	964746	966318	967851	969346	970803	972221	33	12 2
1 52	28	4.961513	4.963162	4.964773	4.966344	4.967876	4.969370	4.970826	4.972245	32	8 2
1 56	29	961541	963190	964799	966370	967901	969395	970850	972268	31	4 2
2 0	30	961569	963217	964826	966395	967927	969420	970874	972291	30	0 2
2 4	31	961597	963244	964852	966421	967952	969444	970898	972315	29	56 1
2 8	32	4.961624	4.963271	4.964878	4.966447	4.967977	4.969469	4.970922	4.972338	28	52 1
2 12	33	961652	963298	964905	966473	968002	969493	970946	972361	27	48 1
2 16	34	961680	963325	964931	966499	968027	969518	970970	972384	26	44 1
2 20	35	961708	963352	964958	966524	968052	969542	970994	972408	25	40 1
2 24	36	4.961735	4.963379	4.964984	4.966550	4.968078	4.969567	4.971018	4.972431	24	36 1
2 28	37	961763	963406	965011	966576	968103	969591	971042	972454	23	32 1
2 32	38	961791	963434	965037	966602	968128	969616	971065	972477	22	28 1
2 36	39	961819	963461	965063	966628	968153	969640	971089	972501	21	24 1
2 40	40	4.961846	4.963488	4.965090	4.966653	4.968178	4.969665	4.971113	4.972524	20	20 1
2 44	41	961874	963515	965116	966679	968203	969689	971137	972547	19	16 1
2 48	42	961902	963542	965143	966705	968228	969714	971161	972570	18	12 1
2 52	43	961929	963569	965169	966730	968253	969738	971185	972593	17	8 1
2 56	44	4.961957	4.963596	4.965195	4.966756	4.968278	4.969762	4.971208	4.972617	16	4 1
3 0	45	961985	963623	965222	966782	968303	969787	971232	972640	15	0 1
3 4	46	962012	963650	965248	966807	968328	969811	971256	972663	14	56 0
3 8	47	962040	963677	965274	966833	968353	969836	971280	972686	13	52 0
3 12	48	4.962067	4.963704	4.965301	4.966859	4.968379	4.969860	4.971303	4.972709	12	48 0
3 16	49	962095	963730	965327	966884	968404	969884	971327	972732	11	44 0
3 20	50	962123	963757	965353	966910	968429	969909	971351	972755	10	40 0
3 24	51	962150	963784	965379	966936	968453	969933	971375	972778	9	36 0
3 28	52	4.962178	4.963811	4.965406	4.966961	4.968478	4.969957	4.971398	4.972802	8	32 0
3 32	53	962205	963838	965432	966987	968503	969982	971422	972825	7	28 0
3 36	54	962233	963865	965458	967012	968528	970006	971446	972848	6	24 0
3 40	55	962260	963892	965484	967038	968553	970030	971469	972871	5	20 0
3 44	56	4.962288	4.963919	4.965511	4.967064	4.968578	4.970055	4.971493	4.972894	4	16 0
3 48	57	962315	963946	965537	967089	968603	970079	971517	972917	3	12 0
3 52	58	962343	963972	965563	967115	968628	970103	971540	972940	2	8 0
3 56	59	962370	963999	965589	967140	968653	970127	971564	972963	1	4 0
4 0	60	4.962398	4.964026	4.965615	4.967166	4.968678	4.970152	4.971588	4.972986	0	0 0
Time		227°	226°	225°	224°	223°	222°	221°	220°	Time	
		8 ^m	4 ^m	0 ^m 15 ^h	56 ^m	52 ^m	48 ^m	44 ^m	40 ^m		

15 Hours

14 Hours

9 Hours

Log. Haversines. (t)

9 Hours.

Time m s	Arc.	20 ^m	24 ^m	28 ^m	32 ^m	36 ^m	40 ^m	44 ^m	48 ^m	Arc.	Time s m
		140°	141°	142°	143°	144°	145°	146°	147°		
0 0	0	4.973986	4.974347	4.975670	4.976957	4.978206	4.979419	4.980596	4.981737	60	0 4
0 4	1	973009	974369	975692	976978	978227	979439	980616	981756	59	56 3
0 8	2	973032	974391	975713	976999	978247	979459	980635	981774	58	52 3
0 12	3	973055	974414	975735	977020	978268	979479	980654	981793	57	48 3
0 16	4	4.973078	4.974436	4.975757	4.977041	4.978288	4.979499	4.980673	4.981812	56	44 3
0 20	5	973101	974458	975779	977062	978309	979519	980693	981830	55	40 3
0 24	6	973124	974481	975800	977083	978329	979539	980712	981849	54	36 3
0 28	7	973146	974503	975822	977104	978350	979559	980731	981868	53	32 3
0 32	8	4.973169	4.974525	4.975844	4.977125	4.978370	4.979578	4.980750	4.981886	52	28 3
0 36	9	973192	974547	975865	977146	978391	979598	980770	981905	51	24 3
0 40	10	973215	974570	975887	977167	978411	979618	980789	981924	50	20 3
0 44	11	973238	974592	975909	977188	978431	979638	980808	981942	49	16 3
0 48	12	4.973261	4.974614	4.975930	4.977209	4.978452	4.979658	4.980827	4.981961	48	12 3
0 52	13	973284	974636	975952	977230	978472	979678	980846	981979	47	8 3
0 56	14	973307	974659	975974	977251	978493	979697	980866	981998	46	4 3
1 0	15	973329	974681	975995	977272	978513	979717	980885	982016	45	0 3
1 4	16	4.973352	4.974703	4.976017	4.977293	4.978533	4.979737	4.980904	4.982035	44	56 2
1 8	17	973375	974725	976038	977314	978554	979757	980923	982054	43	52 2
1 12	18	973398	974747	976060	977335	978574	979776	980942	982072	42	48 2
1 16	19	973421	974770	976081	977356	978594	979796	980961	982091	41	44 2
1 20	20	4.973443	4.974792	4.976103	4.977377	4.978615	4.979816	4.980980	4.982109	40	40 2
1 24	21	973466	974814	976124	977398	978635	979835	981000	982128	39	36 2
1 28	22	973489	974836	976146	977419	978655	979855	981019	982146	38	32 2
1 32	23	973512	974858	976168	977440	978676	979875	981038	982165	37	28 2
1 36	24	4.973535	4.974880	4.976189	4.977461	4.978696	4.979895	4.981057	4.982183	36	24 2
1 40	25	973557	974902	976211	977482	978716	979914	981076	982202	35	20 2
1 44	26	973580	974925	976232	977503	978736	979934	981095	982220	34	16 2
1 48	27	973603	974947	976254	977523	978757	979954	981114	982238	33	12 2
1 52	28	4.973625	4.974969	4.976275	4.977544	4.978777	4.979973	4.981133	4.982257	32	8 2
1 56	29	973648	974991	976296	977565	978797	979993	981152	982275	31	4 2
2 0	30	973671	975013	976318	977586	978817	980012	981171	982294	30	0 2
2 4	31	973693	975035	976339	977607	978838	980032	981190	982312	29	56 1
2 8	32	4.973716	4.975057	4.976361	4.977628	4.978858	4.980052	4.981209	4.982331	28	52 1
2 12	33	973739	975079	976382	977648	978878	980071	981228	982349	27	48 1
2 16	34	973761	975101	976404	977669	978898	980091	981247	982367	26	44 1
2 20	35	973784	975123	976425	977690	978918	980110	981266	982386	25	40 1
2 24	36	4.973807	4.975145	4.976446	4.977711	4.978939	4.980130	4.981285	4.982404	24	36 1
2 28	37	973829	975167	976468	977732	978959	980149	981304	982422	23	32 1
2 32	38	973852	975189	976489	977752	978979	980169	981323	982441	22	28 1
2 36	39	973874	975211	976510	977773	978999	980189	981342	982459	21	24 1
2 40	40	4.973897	4.975233	4.976532	4.977794	4.979019	4.980208	4.981361	4.982477	20	20 1
2 44	41	973920	975255	976553	977814	979039	980228	981380	982496	19	16 1
2 48	42	973942	975277	976574	977835	979059	980247	981399	982514	18	12 1
2 52	43	973965	975299	976596	977856	979079	980267	981417	982532	17	8 1
2 56	44	4.973987	4.975321	4.976617	4.977877	4.979100	4.980286	4.981436	4.982551	16	4 1
3 0	45	974010	975343	976638	977897	979120	980305	981455	982569	15	0 1
3 4	46	974032	975365	976660	977918	979140	980325	981474	982587	14	56 0
3 8	47	974055	975386	976681	977939	979160	980344	981493	982605	13	52 0
3 12	48	4.974077	4.975408	4.976702	4.977959	4.979180	4.980364	4.981512	4.982624	12	48 0
3 16	49	974100	975430	976723	977980	979200	980383	981530	982642	11	44 0
3 20	50	974122	975452	976745	978001	979220	980403	981549	982660	10	40 0
3 24	51	974145	975474	976766	978021	979240	980422	981568	982678	9	36 0
3 28	52	4.974167	4.975496	4.976787	4.978042	4.979260	4.980441	4.981587	4.982696	8	32 0
3 32	53	974190	975518	976808	978062	979280	980461	981606	982715	7	28 0
3 36	54	974212	975539	976830	978083	979300	980480	981624	982733	6	24 0
3 40	55	974235	975561	976851	978104	979320	980500	981643	982751	5	20 0
3 44	56	4.974257	4.975583	4.976872	4.978124	4.979340	4.980519	4.981662	4.982769	4	16 0
3 48	57	974279	975605	976893	978145	979360	980538	981681	982787	3	12 0
3 52	58	974302	975626	976914	978165	979380	980558	981699	982805	2	8 0
3 56	59	974324	975648	976935	978186	979400	980577	981718	982823	1	4 0
4 0	60	4.974347	4.975670	4.976957	4.978206	4.979419	4.980596	4.981737	4.982842	0	0 0
m s	Arc.	219°	218°	217°	16°	215°	214°	213°	212°	Arc.	m s
Time		36 ^m	32 ^m	28 ^m	24 ^m	20 ^m	16 ^m	12 ^m	8 ^m		Time

14 Hours.

230

14 Hours.

9 Hours.

Log. Haversines. (6)

10 Hours.

Time m s	Arc.	52 ^m	56 ^m	10 ^h 0 ^m	4 ^m	8 ^m	12 ^m	16 ^m	20 ^m	Arc.	Time s m
		148°	149°	150°	151°	152°	153°	154°	155°		
0 0	0	4.982842	4.983910	4.984944	4.985942	4.986904	4.987831	4.988724	4.989581	60	0 4
0 4	1	982860	983928	984961	985958	986920	987847	988738	989595	59	56 3
0 8	2	982878	983945	984978	985974	986936	987862	988753	989609	58	52 3
0 12	3	982896	983963	984994	985991	986951	987877	988768	989623	57	48 3
0 16	4	4.982914	4.983980	4.985011	4.986007	4.986967	4.987892	4.988782	4.989637	56	44 3
0 20	5	982932	983998	985028	986023	986983	987907	988797	989651	55	40 3
0 24	6	982950	984015	985045	986039	986998	987922	988811	989665	54	36 3
0 28	7	982968	984033	985062	986056	987014	987937	988826	989679	53	32 3
0 32	8	4.982986	4.984050	4.985079	4.986072	4.987030	4.987952	4.988840	4.989693	52	28 3
0 36	9	983004	984068	985096	986088	987045	987968	988855	989707	51	24 3
0 40	10	983022	984085	985112	986104	987061	987983	988869	989721	50	20 3
0 44	11	983040	984103	985129	986121	987077	987998	988884	989735	49	16 3
0 48	12	4.983058	4.984120	4.985146	4.986137	4.987092	4.988013	4.988898	4.989749	48	12 3
0 52	13	983076	984137	985163	986153	987108	988028	988913	989763	47	8 3
0 56	14	983094	984155	985180	986169	987124	988043	988927	989777	46	4 3
1 0	15	983112	984172	985196	986185	987139	988058	988942	989790	45	0 3
1 4	16	4.983130	4.984189	4.985213	4.986202	4.987155	4.988073	4.988956	4.989804	44	56 2
1 8	17	983148	984207	985230	986218	987170	988088	988970	989818	43	52 2
1 12	18	983166	984224	985247	986234	987186	988103	988985	989832	42	48 2
1 16	19	983184	984242	985264	986250	987202	988118	988999	989846	41	44 2
1 20	20	4.983202	4.984259	4.985280	4.986266	4.987217	4.988133	4.989014	4.989860	40	40 2
1 24	21	983220	984276	985297	986282	987233	988148	989028	989873	39	36 2
1 28	22	983238	984293	985314	986299	987248	988163	989042	989887	38	32 2
1 32	23	983256	984311	985330	986315	987264	988178	989057	989901	37	28 2
1 36	24	4.983273	4.984328	4.985347	4.986331	4.987279	4.988193	4.989071	4.989915	36	24 2
1 40	25	983291	984345	985364	986347	987295	988208	989085	989929	35	20 2
1 44	26	983309	984363	985380	986363	987310	988222	989100	989942	34	16 2
1 48	27	983327	984380	985397	986379	987326	988237	989114	989956	33	12 2
1 52	28	4.983345	4.984397	4.985414	4.986395	4.987341	4.988252	4.989128	4.989970	32	8 2
1 56	29	983363	984414	985430	986411	987357	988267	989143	989984	31	4 2
2 0	30	983380	984432	985447	986427	987372	988282	989157	989997	30	0 2
2 4	31	983398	984449	985464	986443	987388	988297	989171	990011	29	56 1
2 8	32	4.983416	4.984466	4.985480	4.986459	4.987403	4.988312	4.989186	4.990025	28	52 1
2 12	33	983434	984483	985497	986475	987418	988327	989200	990038	27	48 1
2 16	34	983452	984500	985513	986491	987434	988341	989214	990052	26	44 1
2 20	35	983469	984518	985530	986507	987449	988356	989228	990066	25	40 1
2 24	36	4.983487	4.984535	4.985547	4.986523	4.987465	4.988371	4.989243	4.990079	24	36 1
2 28	37	983505	984552	985563	986539	987480	988386	989257	990093	23	32 1
2 32	38	983523	984569	985580	986555	987495	988401	989271	990107	22	28 1
2 36	39	983540	984586	985596	986571	987511	988416	989285	990120	21	24 1
2 40	40	4.983558	4.984603	4.985613	4.986587	4.987526	4.988430	4.989300	4.990134	20	20 1
2 44	41	983576	984620	985629	986603	987542	988445	989314	990148	19	16 1
2 48	42	983594	984637	985646	986619	987557	988460	989328	990161	18	12 1
2 52	43	983611	984655	985662	986635	987572	988475	989342	990175	17	8 1
2 56	44	4.983629	4.984672	4.985679	4.986651	4.987588	4.988489	4.989356	4.990188	16	4 1
3 0	45	983647	984689	985695	986667	987603	988504	989370	990202	15	0 1
3 4	46	983664	984706	985712	986683	987618	988519	989384	990215	14	56 0
3 8	47	983682	984723	985728	986699	987634	988533	989399	990229	13	52 0
3 12	48	4.983700	4.984740	4.985745	4.986714	4.987649	4.988548	4.989413	4.990243	12	48 0
3 16	49	983717	984757	985761	986730	987664	988563	989427	990256	11	44 0
3 20	50	983735	984774	985778	986746	987679	988578	989441	990270	10	40 0
3 24	51	983752	984791	985794	986762	987695	988592	989455	990283	9	36 0
3 28	52	4.983770	4.984808	4.985811	4.986778	4.987710	4.988607	4.989469	4.990297	8	32 0
3 32	53	983788	984825	985827	986794	987725	988622	989483	990310	7	28 0
3 36	54	983805	984842	985843	986809	987740	988636	989497	990324	6	24 0
3 40	55	983823	984859	985860	986825	987756	988651	989511	990337	5	20 0
3 44	56	4.983840	4.984876	4.985876	4.986841	4.987771	4.988665	4.989525	4.990351	4	16 0
3 48	57	983858	984893	985892	986857	987786	988680	989539	990364	3	12 0
3 52	58	983875	984910	985909	986873	987801	988695	989553	990377	2	8 0
3 56	59	983893	984927	985925	986888	987816	988709	989567	990391	1	4 0
4 0	60	4.983910	4.984944	4.985942	4.986904	4.987831	4.988724	4.989581	4.990404	0	0 0
Time m s	Arc.	211°	210°	209°	208°	207°	206°	205°	204°	Arc.	Time s m
		4 ^m	0 ^m 14 ^h	56 ^m	52 ^m	48 ^m	44 ^m	40 ^m	36 ^m		

14 Hours

18 Hours

10 Hours.

 $\frac{1}{2}$ Log. Haversines. (6)

10 Hours.

Time m s	Arc.	24 ^m	28 ^m	32 ^m	36 ^m	40 ^m	44 ^m	48 ^m	52 ^m	Arc.	Time s m
		156°	157°	158°	159°	160°	161°	162°	163°		
0 0	0	4.990404	4.991193	4.991947	4.992666	4.993351	4.994003	4.994620	4.995203	60	0 4
0 4	1	990418	991206	991959	992678	993363	994013	994630	995213	59	56 3
0 8	2	990431	991218	991971	992689	993374	994024	994640	995222	58	52 3
0 12	3	990445	991231	991983	992701	993385	994034	994650	995231	57	48 3
0 16	4	4.990458	4.991244	4.991996	4.992713	4.993396	4.994045	4.994660	4.995241	56	44 3
0 20	5	990471	991257	992008	992724	993407	994055	994670	995250	55	40 3
0 24	6	990485	991270	992020	992736	993418	994066	994680	995260	54	36 3
0 28	7	990498	991282	992032	992748	993429	994076	994690	995269	53	32 3
0 32	8	4.990511	4.991295	4.992044	4.992759	4.993440	4.994087	4.994700	4.995278	52	28 3
0 36	9	990525	991308	992057	992771	993451	994097	994710	995288	51	24 3
0 40	10	990538	991321	992069	992783	993462	994108	994719	995297	50	20 3
0 44	11	990551	991333	992081	992794	993473	994118	994729	995306	49	16 3
0 48	12	4.990565	4.991346	4.992093	4.992806	4.993484	4.994129	4.994739	4.995316	48	12 3
0 52	13	990578	991359	992105	992817	993495	994139	994749	995325	47	8 3
0 56	14	990591	991372	992117	992829	993506	994150	994759	995334	46	4 3
I 0	15	990605	991384	992130	992841	993517	994160	994769	995344	45	0 3
I 4	16	4.990618	4.991397	4.992142	4.992852	4.993528	4.994171	4.994779	4.995353	44	56 2
I 8	17	990631	991410	992154	992864	993539	994181	994789	995362	43	52 2
I 12	18	990644	991422	992166	992875	993550	994191	994798	995372	42	48 2
I 16	19	990658	991435	992178	992887	993561	994202	994808	995381	41	44 2
I 20	20	4.990671	4.991448	4.992190	4.992898	4.993572	4.994212	4.994818	4.995390	40	40 2
I 24	21	990684	991460	992202	992910	993583	994223	994828	995399	39	36 2
I 28	22	990697	991473	992214	992921	993594	994233	994838	995409	38	32 2
I 32	23	990711	991486	992226	992933	993605	994243	994847	995418	37	28 2
I 36	24	4.990724	4.991498	4.992238	4.992944	4.993616	4.994254	4.994857	4.995427	36	24 2
I 40	25	990737	991511	992251	992956	993627	994264	994867	995436	35	20 2
I 44	26	990750	991524	992263	992967	993638	994274	994877	995445	34	16 2
I 48	27	990763	991536	992275	992979	993649	994285	994887	995455	33	12 2
I 52	28	4.990777	4.991549	4.992287	4.992990	4.993660	4.994295	4.994896	4.995464	32	8 2
I 56	29	990790	991561	992299	993002	993670	994305	994906	995473	31	4 2
2 0	30	990803	991574	992311	993013	993681	994316	994916	995482	30	0 2
2 4	31	990816	991586	992323	993024	993692	994326	994925	995491	29	56 1
2 8	32	4.990829	4.991599	4.992335	4.993036	4.993703	4.994336	4.994935	4.995500	28	52 1
2 12	33	990842	991612	992347	993047	993714	994346	994945	995510	27	48 1
2 16	34	990855	991624	992358	993059	993725	994357	994955	995519	26	44 1
2 20	35	990868	991637	992370	993070	993735	994367	994964	995528	25	40 1
2 24	36	4.990881	4.991649	4.992382	4.993081	4.993746	4.994377	4.994974	4.995537	24	36 1
2 28	37	990895	991662	992394	993093	993757	994387	994984	995546	23	32 1
2 32	38	990908	991674	992406	993104	993768	994397	994993	995555	22	28 1
2 36	39	990921	991687	992418	993115	993779	994408	995003	995564	21	24 1
2 40	40	4.990934	4.991699	4.992430	4.993127	4.993789	4.994418	4.995013	4.995573	20	20 1
2 44	41	990947	991712	992442	993138	993800	994428	995022	995582	19	16 1
2 48	42	990960	991724	992454	993149	993811	994438	995032	995591	18	12 1
2 52	43	990973	991736	992466	993161	993822	994448	995041	995600	17	8 1
2 56	44	4.990986	4.991749	4.992478	4.993172	4.993832	4.994459	4.995051	4.995609	16	4 1
3 0	45	990999	991761	992489	993183	993843	994469	995061	995619	15	0 1
3 4	46	991012	991774	992501	993195	993854	994479	995070	995628	14	56 0
3 8	47	991025	991786	992513	993206	993864	994489	995080	995637	13	52 0
3 12	48	4.991038	4.991799	4.992525	4.993217	4.993875	4.994499	4.995089	4.995646	12	48 0
3 16	49	991051	991811	992537	993228	993886	994509	995099	995655	11	44 0
3 20	50	991064	991823	992549	993240	993896	994519	995108	995663	10	40 0
3 24	51	991077	991836	992560	993251	993907	994529	995118	995672	9	36 0
3 28	52	4.991090	4.991848	4.992572	4.993262	4.993918	4.994540	4.995127	4.995681	8	32 0
3 32	53	991102	991860	992584	993273	993928	994550	995137	995690	7	28 0
3 36	54	991115	991873	992596	993284	993939	994560	995146	995699	6	24 0
3 40	55	991128	991885	992607	993296	993950	994570	995156	995708	5	20 0
3 44	56	4.991141	4.991897	4.992619	4.993307	4.993960	4.994580	4.995165	4.995717	4	16 0
3 48	57	991154	991910	992631	993318	993971	994590	995175	995726	3	12 0
3 52	58	991167	991922	992643	993329	993981	994600	995184	995735	2	8 0
3 56	59	991180	991934	992654	993340	993992	994610	995194	995744	1	4 0
4 0	60	4.991193	4.991947	4.992666	4.993351	4.994003	4.994620	4.995203	4.995753	0	0 0
m s	Arc.	203°	202°	201°	200°	199°	198°	197°	196°	Arc.	Time
Time		32 ^m	28 ^m	24 ^m	20 ^m	16 ^m	12 ^m	8 ^m	4 ^m		

13 Hours.

231

13 Hours.

10 Hours.

Log. Haversines. (6)

11 Hours.

Time m s	Arc.	10 ^h 56 ^m	11 ^h 0 ^m	4 ^m	8 ^m	12 ^m	16 ^m	20 ^m	24 ^m	Arc.	Time m s
		164°	165°	166°	167°	168°	169°	170°	171°		
0 0	0	4.995753	4.996269	4.996751	4.997199	4.997614	4.997996	4.998344	4.998659	60	0 4
0 4	1	995762	996277	996758	997206	997621	998002	998350	998664	59	56 3
0 8	2	995770	996285	996766	997214	997628	998008	998355	998669	58	52 3
0 12	3	995779	996293	996774	997221	997634	998014	998361	998674	57	48 3
0 16	4	4.995788	4.996302	4.996782	4.997228	4.997641	4.998020	4.998366	4.998679	56	44 3
0 20	5	995797	996310	996789	997235	997647	998026	998372	998684	55	40 3
0 24	6	995806	996318	996797	997242	997654	998032	998377	998689	54	36 3
0 28	7	995815	996326	996805	997249	997661	998038	998383	998694	53	32 3
0 32	8	4.995823	4.996335	4.996812	4.997257	4.997667	4.998044	4.998388	4.998699	52	28 3
0 36	9	995832	996343	996820	997264	997674	998050	998394	998703	51	24 3
0 40	10	995841	996351	996828	997271	997680	998056	998399	998708	50	20 3
0 44	11	995850	996359	996835	997278	997687	998062	998404	998713	49	16 3
0 48	12	4.995859	4.996368	4.996843	4.997285	4.997693	4.998068	4.998410	4.998718	48	12 3
0 52	13	995867	996376	996851	997292	997700	998074	998415	998723	47	8 3
0 56	14	995876	996384	996858	997299	997706	998080	998421	998728	46	4 3
1 0	15	995885	996392	996866	997306	997713	998086	998426	998733	45	0 3
1 4	16	4.995894	4.996400	4.996874	4.997313	4.997719	4.998092	4.998431	4.998737	44	56 2
1 8	17	995902	996409	996881	997320	997726	998098	998437	998742	43	52 2
1 12	18	995911	996417	996889	997327	997732	998104	998442	998747	42	48 2
1 16	19	995920	996425	996896	997334	997739	998110	998448	998752	41	44 2
1 20	20	4.995928	4.996433	4.996904	4.997341	4.997745	4.998116	4.998453	4.998757	40	40 2
1 24	21	995937	996441	996911	997348	997752	998122	998458	998761	39	36 2
1 28	22	995946	996449	996919	997355	997758	998127	998464	998766	38	32 2
1 32	23	995954	996457	996927	997362	997765	998133	998469	998771	37	28 2
1 36	24	4.995963	4.996465	4.996934	4.997369	4.997771	4.998139	4.998474	4.998776	36	24 2
1 40	25	995972	996473	996942	997376	997777	998145	998479	998780	35	20 2
1 44	26	995980	996482	996949	997383	997784	998151	998485	998785	34	16 2
1 48	27	995989	996490	996957	997390	997790	998157	998490	998790	33	12 2
1 52	28	4.995998	4.996498	4.996964	4.997397	4.997797	4.998163	4.998495	4.998795	32	8 2
1 56	29	996006	996506	996972	997404	997803	998168	998501	998799	31	4 2
2 0	30	996015	996514	996979	997411	997809	998174	998506	998804	30	0 2
2 4	31	996023	996522	996987	997418	997816	998180	998511	998809	29	56 1
2 8	32	4.996032	4.996530	4.996994	4.997425	4.997822	4.998186	4.998516	4.998813	28	52 1
2 12	33	996041	996538	997002	997432	997828	998192	998522	998818	27	48 1
2 16	34	996049	996546	997009	997439	997835	998197	998527	998823	26	44 1
2 20	35	996058	996554	997016	997445	997841	998203	998532	998827	25	40 1
2 24	36	4.996066	4.996562	4.997024	4.997452	4.997847	4.998209	4.998537	4.998832	24	36 1
2 28	37	996075	996570	997031	997459	997854	998215	998542	998837	23	32 1
2 32	38	996083	996578	997039	997466	997860	998220	998547	998841	22	28 1
2 36	39	996092	996586	997046	997473	997866	998226	998553	998846	21	24 1
2 40	40	4.996100	4.996594	4.997053	4.997480	4.997872	4.998232	4.998558	4.998851	20	20 1
2 44	41	996109	996602	997061	997486	997879	998238	998563	998855	19	16 1
2 48	42	996117	996610	997068	997493	997885	998243	998568	998860	18	12 1
2 52	43	996126	996617	997076	997500	997891	998249	998573	998864	17	8 1
2 56	44	4.996134	4.996625	4.997083	4.997507	4.997897	4.998255	4.998578	4.998869	16	4 1
3 0	45	996143	996633	997090	997514	997904	998260	998583	998873	15	0 1
3 4	46	996151	996641	997098	997520	997910	998266	998589	998878	14	56 0
3 8	47	996160	996649	997105	997527	997916	998272	998594	998883	13	52 0
3 12	48	4.996168	4.996657	4.997112	4.997534	4.997922	4.998277	4.998599	4.998887	12	48 0
3 16	49	996176	996665	997120	997541	997928	998283	998604	998892	11	44 0
3 20	50	996185	996673	997127	997547	997935	998288	998609	998896	10	40 0
3 24	51	996193	996680	997134	997554	997941	998294	998614	998901	9	36 0
3 28	52	4.996202	4.996688	4.997141	4.997561	4.997947	4.998300	4.998619	4.998905	8	32 0
3 32	53	996210	996696	997149	997568	997953	998305	998624	998910	7	28 0
3 36	54	996218	996704	997156	997574	997959	998311	998629	998914	6	24 0
3 40	55	996227	996712	997163	997581	997965	998316	998634	998919	5	20 0
3 44	56	4.996235	4.996720	4.997170	4.997588	4.997972	4.998322	4.998639	4.998923	4	16 0
3 48	57	996244	996727	997178	997594	997978	998328	998644	998927	3	12 0
3 52	58	996252	996735	997185	997601	997984	998333	998649	998932	2	8 0
3 56	59	996260	996743	997192	997608	997990	998339	998654	998936	1	4 0
4 0	60	4.996269	4.996751	4.997199	4.997614	4.997996	4.998344	4.998659	4.998941	0	0 0
Time m s	Arc.	195°	194°	193°	192°	191°	190°	189°	188°	Arc.	Time m s
		0 ^m 13 ^s	56 ^m 12 ^s	52 ^m	48 ^m	44 ^m	40 ^m	36 ^m	32 ^m		

13 Hours

12 Hours

11 Hours.

Log. Haversines. (4)

11 Hours.

Time m s	Arc.	28 ^m	32 ^m	36 ^m	40 ^m	44 ^m	48 ^m	52 ^m	56 ^m	Arc.	Time m s
		172°	173°	174°	175°	176°	177°	178°	179°		
0	0	4.998941	4.999189	4.999404	4.999586	4.999735	4.999851	4.999934	4.999983	60	0 4
0	4	998945	999193	999408	999589	999738	999853	999935	999984	59	56 3
0	8	998950	999197	999411	999592	999740	999854	999936	999984	58	52 3
0	12	998954	999201	999414	999595	999742	999856	999937	999985	57	48 3
0	16	4.998958	4.999205	4.999418	4.999597	4.999744	4.999858	4.999938	4.999986	56	44 3
0	20	998963	999210	999421	999600	999746	999859	999939	999986	55	40 3
0	24	998967	999212	999424	999603	999748	999861	999940	999987	54	36 3
0	28	998971	999216	999427	999605	999751	999862	999941	999987	53	32 3
0	32	4.998976	4.999220	4.999431	4.999608	4.999753	4.999864	4.999942	4.999988	52	28 3
0	36	998980	999224	999434	999611	999755	999866	999943	999988	51	24 3
0	40	998984	999227	999437	999614	999757	999867	999944	999988	50	20 3
0	44	998989	999231	999440	999616	999759	999869	999945	999989	49	16 3
0	48	4.998993	4.999235	4.999443	4.999619	4.999761	4.999870	4.999946	4.999990	48	12 3
0	52	998997	999239	999447	999621	999763	999872	999947	999990	47	8 3
0	56	999002	999242	999450	999624	999765	999873	999948	999990	46	4 3
1	0	999006	999246	999453	999627	999767	999875	999949	999991	45	0 3
1	4	4.999010	4.999250	4.999456	4.999629	4.999769	4.999876	4.999950	4.999991	44	56 2
1	8	999014	999253	999459	999632	999771	999878	999951	999991	43	52 2
1	12	999019	999257	999462	999635	999774	999879	999952	999992	42	48 2
1	16	999023	999261	999466	999637	999776	999881	999953	999992	41	44 2
1	20	4.999027	4.999265	4.999469	4.999640	4.999778	4.999882	4.999954	4.999993	40	40 2
1	24	999031	999268	999472	999642	999780	999884	999955	999993	39	36 2
1	28	999036	999272	999475	999645	999782	999885	999956	999993	38	32 2
1	32	999040	999276	999478	999647	999784	999887	999957	999994	37	28 2
1	36	4.999044	4.999279	4.999481	4.999650	4.999786	4.999888	4.999958	4.999994	36	24 2
1	40	999048	999283	999484	999652	999788	999890	999958	999994	35	20 2
1	44	999052	999286	999487	999655	999790	999891	999959	999995	34	16 2
1	48	999057	999290	999490	999658	999792	999892	999960	999995	33	12 2
1	52	4.999061	4.999294	4.999493	4.999660	4.999793	4.999894	4.999961	4.999995	32	8 2
1	56	999065	999297	999496	999663	999795	999895	999962	999996	31	4 2
2	0	999069	999301	999500	999666	999797	999897	999963	999996	30	0 2
2	4	999073	999304	999503	999667	999799	999898	999964	999996	29	56 1
2	8	4.999077	4.999308	4.999506	4.999670	4.999801	4.999899	4.999964	4.999996	28	52 1
2	12	999081	999312	999509	999672	999803	999901	999965	999996	27	48 1
2	16	999086	999315	999512	999675	999805	999902	999966	999996	26	44 1
2	20	999090	999319	999515	999677	999807	999903	999967	999996	25	40 1
2	24	4.999094	4.999322	4.999518	4.999680	4.999809	4.999905	4.999968	4.999997	24	36 1
2	28	999098	999326	999521	999682	999811	999906	999968	999997	23	32 1
2	32	999102	999329	999524	999685	999812	999907	999969	999997	22	28 1
2	36	999106	999333	999526	999687	999814	999909	999970	999998	21	24 1
2	40	4.999110	4.999336	4.999530	4.999689	4.999816	4.999910	4.999971	4.999998	20	20 1
2	44	999114	999340	999532	999692	999818	999911	999971	999998	19	16 1
2	48	999118	999343	999535	999694	999820	999912	999972	999998	18	12 1
2	52	999122	999347	999538	999696	999822	999914	999973	999999	17	8 1
2	56	4.999126	4.999350	4.999541	4.999699	4.999823	4.999915	4.999973	4.999999	16	4 1
3	0	999130	999354	999544	999701	999825	999916	999974	999999	15	0 1
3	4	999134	999357	999547	999704	999827	999917	999975	999999	14	56 0
3	8	999138	999361	999550	999706	999829	999919	999975	999999	13	52 0
3	12	4.999142	4.999364	4.999553	4.999708	4.999831	4.999920	4.999976	4.999999	12	48 0
3	16	999146	999367	999556	999710	999832	999921	999977	5.000000	11	44 0
3	20	999150	999371	999558	999713	999834	999922	999977	5.000000	10	40 0
3	24	999154	999374	999561	999715	999836	999924	999978	5.000000	9	36 0
3	28	4.999158	4.999378	4.999564	4.999717	4.999838	4.999925	4.999979	5.000000	8	32 0
3	32	999162	999381	999567	999720	999839	999926	999979	5.000000	7	28 0
3	36	999166	999384	999570	999722	999841	999927	999980	5.000000	6	24 0
3	40	999170	999388	999572	999724	999843	999928	999981	5.000000	5	20 0
3	44	4.999174	4.999391	4.999575	4.999726	4.999844	4.999929	4.999981	5.000000	4	16 0
3	48	999178	999394	999578	999729	999846	999930	999982	5.000000	3	12 0
3	52	999181	999398	999581	999731	999848	999932	999982	5.000000	2	8 0
3	56	999185	999401	999584	999733	999849	999933	999983	5.000000	1	4 0
4	0	4.999189	4.999404	4.999586	4.999735	4.999851	4.999934	4.999983	5.000000	0	0 0
Time	Arc.	187°	186°	185°	184°	183°	182°	181°	180°	Arc.	Time
		28 ^m	24 ^m	20 ^m	16 ^m	12 ^m	8 ^m	4 ^m	0 ^m 12 ^h		

12 Hours.

232

12 Hours.

LOG. HAVERSINES.

0 Hour.

Log. Havensines. (t)

0 Hour.

		0 ^m	1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m	8 ^m	9 ^m
		0 deg.				1 deg.				2 deg.	
Lat.	Long.	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'
0	0	0.000000	4.677574	5.279632	5.631811	5.881684	6.075498	6.233852	6.367737	6.483711	6.586004
1	15	1.121274	691931	286840	636623	885295	078388	236262	369802	485518	587611
2	30	1.723332	706055	293989	641409	888892	081269	238664	371863	487322	589215
3	45	2.075516	719952	301079	646168	892473	084140	241060	373919	489122	590815
4	0	2.325392	4.733631	5.308113	5.650901	5.896041	6.087002	6.243450	6.375970	6.490918	6.592413
5	15	519212	747098	315089	655609	899593	089854	245832	378016	492711	594008
6	30	677575	760359	322010	660292	903131	092697	248209	380057	504500	595600
7	45	811470	773421	328876	664949	906654	095531	250579	382093	506285	597190
8	0	2.927452	4.786289	5.335689	5.669581	5.910164	6.098356	6.252942	6.384125	6.498066	6.598776
9	15	3.029759	798969	342448	674189	913659	101171	255299	386152	509844	600359
10	30	412722	811467	349156	678773	917140	103977	257650	388174	510618	601940
11	45	204057	823788	355811	683332	920608	106774	259994	390191	510389	603517
12	0	3.279635	4.835936	5.362417	5.687868	5.924061	6.109563	6.262332	6.392204	6.505156	6.605092
13	15	349159	847917	368972	692380	927501	112342	264663	394212	506920	606664
14	30	413523	859733	375478	696869	930927	115113	266989	396216	508579	608233
15	45	473454	871393	381936	701334	934340	117874	269308	398215	510436	609799
16	0	3.529512	4.882898	5.388347	5.705777	5.937740	6.120627	6.271621	6.400209	6.512189	6.611363
17	15	582170	894252	394710	710197	941126	123371	273923	402198	513938	612923
18	30	631817	905460	401027	714595	944499	126107	276229	404184	515683	614481
19	45	678780	916525	407298	718971	947859	128834	278523	406164	517426	616036
20	0	3.723332	4.927451	5.413525	5.723325	5.951206	6.131553	6.280812	6.408141	6.519164	6.617589
21	15	765711	938241	419707	727657	954540	134263	283094	410112	520900	619138
22	30	806118	948899	425845	731967	957862	136964	285371	412079	522631	620643
23	45	844728	959427	431940	736256	961170	139657	287642	414042	524360	622228
24	0	3.881695	4.969829	5.437993	5.740525	5.964467	6.142342	6.289906	6.416000	6.526085	6.623703
25	15	917152	980108	444004	744772	967750	145019	292165	417954	527806	625308
26	30	951219	990268	449974	748999	971022	147687	294418	419904	529524	626843
27	45	984000	5.000309	455903	753205	974281	150347	296665	421849	531239	628373
28	0	4.015588	5.010236	5.461791	5.757391	5.977528	6.152999	6.298907	6.423790	6.532950	6.629907
29	15	046068	020050	467640	761556	980763	155643	301142	425726	534658	631435
30	30	075515	029756	473450	765702	983986	158279	303372	427659	536363	633060
31	45	103996	039353	479222	769829	987197	160907	305596	429586	538064	634482
32	0	4.131572	5.048846	5.484955	5.773935	5.990396	6.163527	6.307815	6.431510	6.539762	6.636602
33	15	158300	058236	490650	778023	993583	166139	310028	433429	541457	637519
34	30	184230	067526	496309	782091	996759	168744	312235	435345	543148	639033
35	45	209408	076717	501931	786140	999923	171340	314437	437255	544836	640545
36	0	4.233877	5.085813	5.507517	5.790171	6.003076	6.173929	6.316633	6.439162	6.546521	6.642054
37	15	257675	094814	513067	794183	006217	176510	318823	441065	548202	643560
38	30	280839	103723	518582	798176	009347	179084	321008	442963	549880	645064
39	45	303401	112540	524062	802151	012466	181650	323187	444857	551555	646565
40	0	4.325392	5.121270	5.529507	5.806108	6.015573	6.184208	6.325362	6.446747	6.553227	6.649042
41	15	346840	129913	534919	810047	018670	186759	327530	448633	554896	649560
42	30	367771	138471	540297	813969	021755	189302	329693	450515	556561	651053
43	45	388209	146944	545642	817872	024830	191838	331851	452393	558223	652541
44	0	4.408177	5.155337	5.550955	5.821759	6.027894	6.194366	6.334004	6.454267	6.559882	6.654033
45	15	427697	163648	556235	825628	030946	196888	336151	456137	561538	655518
46	30	446788	171882	561483	829479	033989	199402	338293	458003	563191	657002
47	45	465467	180037	566700	833314	037020	201908	340429	459864	564840	658482
48	0	4.483754	5.188118	5.571885	5.837132	6.040041	6.204408	6.342561	6.461722	6.566487	6.659961
49	15	501664	196123	577040	840933	043052	206900	344687	463576	568130	661436
50	30	519212	204055	582165	844718	046052	209385	346808	465426	569770	662910
51	45	536412	211916	587259	848486	049042	211863	348923	467272	571407	664380
52	0	4.553278	5.219706	5.592323	5.852238	6.052022	6.214334	6.351034	6.469114	6.573041	6.665849
53	15	569823	227427	597359	855974	054991	216798	353140	470952	574672	667314
54	30	586059	235079	602365	859693	057950	219255	355240	472786	576300	668778
55	45	601997	242665	607342	863397	060900	221705	357335	474616	577925	670238
56	0	4.617648	5.250186	5.612292	5.867086	6.063839	6.224148	6.359426	6.476443	6.579547	6.671697
57	15	633021	257641	617213	870758	066768	226584	361511	478265	581166	673153
58	30	648128	265034	622106	874415	069688	229014	363591	480084	582781	674606
59	45	662975	272363	626972	878057	072597	231436	365667	481899	584394	676057
60	0	4.677574	5.279632	5.631811	5.881684	6.075498	6.233852	6.367737	6.483711	6.586004	6.677566
Lat.	Long.	59 ^m	58 ^m	57 ^m	56 ^m	55 ^m	54 ^m	53 ^m	52 ^m	51 ^m	50 ^m

23 Hours.

23 Hours.

N ^o	10 ^m		11 ^m		12 ^m		13 ^m		14 ^m		15 ^m		16 ^m		17 ^m		18 ^m		19 ^m		20 ^m
	2 deg.								3 deg.						4 deg.						
0	6	6.677506	6.760277	6.835838	6.905345	6.969696	7.029602	7.085638	7.138273	7.187897	7.234833	7.281874	7.328915	7.375956	7.422997	7.470038	7.517079	7.564120	7.611161	7.658202	
1	15	678952	761592	837043	906458	970729	030566	086542	139124	188700	235594	282488	329382	376276	423170	470064	516958	563852	610746	657640	
2	30	680396	762904	838247	907569	971761	031530	087445	139974	189503	236355	283207	330059	376911	423763	470615	517467	564319	611171	658023	
3	45	681837	764215	839449	908678	972791	032492	088347	140823	190305	237115	284025	330935	377845	424755	471665	518575	565485	612395	659305	
4	0	6.683276	6.765524	6.840649	6.909787	6.973821	7.033453	7.089248	7.141671	7.191106	7.237874	7.282915	7.328956	7.375000	7.421041	7.467082	7.513123	7.559164	7.605205	7.651246	
5	15	684713	766831	841848	910894	974849	034413	090149	142519	191906	238632	285484	332336	379188	426040	472892	519744	566596	613448	660300	
6	30	686147	768136	843045	911999	975876	035372	091048	143365	192706	239390	286242	333094	379946	426798	473650	520502	567354	614206	661058	
7	45	687579	769439	844240	913103	976902	036329	091946	144211	193505	240147	287000	333852	380704	427556	474408	521260	568112	614964	661816	
8	0	6.689009	6.770740	6.845434	6.914206	6.977926	7.037286	7.092844	7.145056	7.194303	7.240904	7.285945	7.331986	7.378027	7.424068	7.470109	7.516150	7.562191	7.608232	7.654273	
9	15	690436	772039	846626	915307	978950	038242	093740	145900	195101	241660	288812	335964	383116	430268	477420	524572	571724	618876	666028	
10	30	691861	773336	847816	916407	979972	039197	094636	146744	195898	242415	289567	336719	383871	431023	478175	525327	572479	619631	666783	
11	45	693283	774631	849005	917505	980993	040150	095530	147586	196694	243169	290321	337473	384625	431777	478929	526081	573233	620385	667537	
12	0	6.694703	6.775924	6.850192	6.918603	6.982013	7.041103	7.096424	7.148428	7.197489	7.243923	7.289964	7.335998	7.382032	7.428066	7.474100	7.520134	7.566168	7.612202	7.658236	
13	15	696121	777216	851377	919698	983031	042054	097317	149269	198284	244676	291828	338980	386132	433284	480436	527588	574740	621892	669044	
14	30	697537	778505	852561	920793	984048	043005	098209	150109	199078	245429	292581	339733	386885	434037	481189	528341	575493	622645	669797	
15	45	698950	779793	853743	921886	985064	043954	099100	150948	199871	246181	293333	340485	387637	434789	481941	529093	576245	623397	670549	
16	0	6.700361	6.781078	6.851924	6.922977	6.986080	7.044903	7.099900	7.151786	7.200663	7.246932	7.292973	7.338914	7.384855	7.430796	7.476737	7.522678	7.568619	7.614560	7.660501	
17	15	701770	782362	856103	924067	987093	045850	100879	152624	201455	247683	294835	341987	389139	436291	483443	530595	577747	624899	672051	
18	30	703176	783644	857281	925156	988106	046796	101767	153461	202246	248433	295585	342737	389889	437041	484193	531345	578497	625649	672801	
19	45	704580	784924	858457	926244	989117	047742	102654	154297	203036	249182	296334	343486	390638	437790	484942	532094	579246	626398	673550	
20	0	6.705982	6.786202	6.856931	6.927330	6.990128	7.048686	7.103541	7.155132	7.203826	7.249931	7.295972	7.341913	7.387854	7.433795	7.479736	7.525677	7.571618	7.617559	7.663500	
21	15	707382	787478	860804	928414	991137	049629	104426	155966	204615	250679	296730	342781	389833	436884	483936	530987	578039	625091	672143	
22	30	708779	788752	861975	929498	992145	050571	105311	156800	205403	251426	297477	343528	390580	437632	484683	531735	578787	625839	672891	
23	45	710174	790024	863144	930580	993151	051513	106194	157633	206190	252173	298224	344275	391327	438379	485430	532482	579534	626586	673638	
24	0	6.711567	6.791295	6.864312	6.931661	6.994157	7.052453	7.107077	7.158465	7.206977	7.252919	7.298860	7.344701	7.390542	7.436383	7.482224	7.528065	7.573906	7.619747	7.665588	
25	15	712957	792564	865478	932740	995161	053392	107959	159296	207763	253664	299715	345766	391817	438869	485920	532972	579023	625075	673127	
26	30	714346	793830	866643	933818	996165	054330	108840	160126	208548	254409	299960	346011	392063	439114	486166	533217	579269	625321	673373	
27	45	715732	795095	867807	934895	997167	055267	109720	160956	209333	255153	299960	347063	392614	439666	486718	533769	579821	625873	673925	
28	0	6.717116	6.796359	6.868968	6.935970	6.998168	7.056203	7.110599	7.161785	7.210117	7.255897	7.301678	7.347459	7.393240	7.439021	7.484802	7.530583	7.576364	7.622145	7.667926	
29	15	718498	797620	870128	937044	999167	057138	111478	162613	210900	256640	302381	348122	393863	440004	486145	532286	578427	624568	672710	
30	30	719877	798879	871287	938117	1000166	058073	112355	163440	211682	257382	303123	348864	394605	440746	486887	533028	579169	625310	673452	
31	45	721255	800137	872444	939188	1001163	059006	113232	164266	212464	258124	303865	349606	395347	441488	487629	533770	579911	626052	674194	
32	0	6.722630	6.801393	6.873600	6.940258	7.002160	7.059938	7.114107	7.165092	7.213245	7.258865	7.304486	7.350107	7.395728	7.441349	7.486970	7.532591	7.578212	7.623833	7.669454	
33	15	724003	802647	874754	941327	1003155	060869	114982	165917	214025	259605	305346	351087	396828	442969	489110	535251	580892	626533	674675	
34	30	725374	803899	875906	942394	1004149	061799	115856	166741	214805	260345	306086	351827	397568	443710	489851	535992	581633	627174	675316	
35	45	726743	805149	877057	943460	1005142	062728	116729	167564	215584	261084	306825	352566	398307	444651	490792	536933	582574	627815	675957	
36	0	6.728109	6.806398	6.878206	6.944525	7.006134	7.063656	7.117601	7.168387	7.216362	7.261822	7.307283	7.352743	7.398204	7.443664	7.489125	7.534585	7.580046	7.625506	7.670967	
37	15	729473	807645	879354	945589	1007124	064583	118472	169208	217140	262560	308301	354042	399783	445924	492065	538206	583847	629388	676450	
38	30	730836	808890	880501	946651	1008114	065510	119343	170029	217917	263297	309038	354779	400520	446661	492802	538943	584584	630125	677187	
39	45	732196	810133	881645	947712	1009102	066435	120212	170849	218693	264034	309775	355516	401257	447398	493539	539680	585321	630862	677924	
40	0	6.733554	6.811375	6.882789	6.948771	7.010089	7.067359	7.121081	7.171669	7.219468	7.264770	7.309971	7.355272	7.400573	7.445874	7.491175	7.536476	7.581777	7.627078	7.672379	
41	15	734910	812614	883931	949829	1011075	068282	121949	172488	220243	265505	310746	356487	402028	448169	494310	540451	586092	631633	678174	
42	30	736263	813852	885071	950887	1012061	069204	122816	173305	221017	266240	311481	357222	402763	448904	495045	541186	586827	632368	678909	
43	45	737615	815088	886210	951942	1013044	070125	123681	174122	221790	266974	312645	358386	403827	449968	496109	542250	587891	633409	679431	
44	0	6.738965	6.816323	6.887347	6.952997	7.014027	7.071046	7.124547	7.174939	7.222563	7.267707	7.312851	7.357995	7.403139	7.448283	7.493427	7.538571	7.583715	7.628859	7.673999	
45	15	740312	817555	888483	954050	1015009	071965	125411	175754	223335	268440	313791	359532	405073	451214	497355	543496	589137	634678	680219	
46	30	741657	818786	889617	955102	1015989	072883	126275	176569	224106	269172	314947	360688	406229	452370	498511	544652	590293	635834	681375	
47	45	743001	820015	890750	956152	1016969	073800	127137	177383	224877	269904	315899	361640	407181	453322	499463	545504	591145	636686	682227	
48	0	6.744342	6.821243	6.891882	6.957202	7.017947	7.074717	7.127999	7.178196	7.225647	7.270635	7.315623	7.360611	7.405600	7.450588	7.495576	7.540564	7.585552	7.630540	7.675528	
49	15	745681	822468	893012	958250	1018924	075632	128860	179009	226416	271365	317314	363055	408396	454537	499525	545666	591307	636848	682389	
50	30	747018	823692	894140	959297	1019901	076547	129720	179821	227185	272095	318044	363785	409126	455267	500255	546396	592037	637578	683119	
51	45	748353	824915	895267																	

0 Ноча.

Log. Haversines. (f)

0 Ноча.

		20 ^m	21 ^m	22 ^m	23 ^m	24 ^m	25 ^m	26 ^m	27 ^m	28 ^m	29 ^m		
		5 deg.					6 deg.					7 deg.	
Lat.	Long.	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'	Lat.	Long.
0	0	7.279359	7.321709	7.362087	7.400666	7.437600	7.473024	7.507056	7.539800	7.571351	7.601791	60	0
1	15	280082	322399	362744	401294	438203	473602	507612	540333	571867	602290	59	15
2	30	280805	323086	363401	401923	438805	474180	508167	540870	572383	602788	58	30
3	45	281526	323774	364057	402550	439406	474758	508723	541405	572898	603285	57	45
4	0	7.282248	7.324461	7.364713	7.403178	7.440008	7.475335	7.509278	7.541939	7.573414	7.603783	56	0
5	15	282968	325147	365368	403805	440608	475912	509832	542474	573929	604280	55	15
6	30	283688	325833	366023	404431	441209	476488	510386	543007	574443	604777	54	30
7	45	284408	326518	366677	405057	441809	477064	510940	543541	574938	605274	53	45
8	0	7.285127	7.327203	7.367331	7.405682	7.442408	7.477640	7.511494	7.544074	7.575472	7.605770	52	0
9	15	285845	327887	367984	406307	443007	478215	512047	544606	575985	606266	51	15
10	30	286563	328571	368637	406932	443606	478790	512600	545139	576499	606762	50	30
11	45	287280	329254	369289	407556	444204	479364	513152	545671	577012	607258	49	45
12	0	7.287996	7.329937	7.369941	7.408180	7.444802	7.479938	7.513704	7.546203	7.577525	7.607753	48	0
13	15	288712	330619	370592	408803	445399	480512	514246	546734	578037	608248	47	15
14	30	289428	331300	371243	409426	445996	481085	514807	547265	578550	608743	46	30
15	45	290142	331981	371894	410048	446593	481658	515358	547796	579062	609237	45	45
16	0	7.290856	7.332662	7.372544	7.410670	7.447189	7.482231	7.515909	7.548327	7.579573	7.609731	44	0
17	15	291570	333342	373193	411291	447785	482803	516460	548857	580085	610225	43	15
18	30	292283	334021	373842	411913	448380	483375	517010	549386	580596	610718	42	30
19	45	292995	334700	374490	412533	448975	483946	517559	549916	581106	611212	41	45
20	0	7.293707	7.335379	7.375138	7.413153	7.449570	7.484517	7.518109	7.550445	7.581617	7.611705	40	0
21	15	294418	336056	375786	413773	450164	485088	518658	550974	582127	612197	39	15
22	30	295129	336734	376433	414392	450758	485658	519206	551502	582637	612690	38	30
23	45	295839	337410	377079	415011	451351	486228	519754	552031	583146	613182	37	45
24	0	7.296548	7.338087	7.377725	7.415629	7.451944	7.486798	7.520302	7.552559	7.583656	7.613674	36	0
25	15	297257	338762	378371	416247	452537	487367	520850	553086	584164	614165	35	15
26	30	297965	339438	379016	416865	453129	487936	521397	553613	584673	614657	34	30
27	45	298673	340112	379660	417481	453721	488504	521944	554140	585181	615148	33	45
28	0	7.299380	7.340786	7.380304	7.418098	7.454312	7.489072	7.522491	7.554667	7.585696	7.615638	32	0
29	15	300087	341460	380948	418714	454903	489640	523037	555193	586197	616129	31	15
30	30	300793	342133	381591	419330	455493	490207	523583	555719	586705	616619	30	30
31	45	301498	342806	382234	419945	456083	490774	524128	556245	587212	617109	29	45
32	0	7.302203	7.343478	7.382876	7.420560	7.456673	7.491341	7.524673	7.556770	7.587719	7.617599	28	0
33	15	302907	344149	383517	421174	457262	491907	525218	557295	588225	618088	27	15
34	30	303611	344820	384159	421788	457851	492473	525763	557820	588732	618577	26	30
35	45	304314	345491	384799	422402	458440	493038	526307	558344	589237	619066	25	45
36	0	7.305017	7.346161	7.385440	7.423016	7.459028	7.493603	7.526850	7.558868	7.589743	7.619554	24	0
37	15	305719	346830	386079	423628	459616	494168	527394	559392	590248	620043	23	15
38	30	306420	347499	386719	424240	460203	494732	527937	559915	590754	620531	22	30
39	45	307121	348168	387358	424852	460790	495296	528480	560438	591258	621018	21	45
40	0	7.307821	7.348835	7.387996	7.425463	7.461376	7.495860	7.529022	7.560961	7.591763	7.621506	20	0
41	15	308521	349503	388634	426074	461962	496423	529554	561483	592267	621993	19	15
42	30	309220	350170	389271	426684	462548	496986	530106	562006	592771	622480	18	30
43	45	309919	350836	389908	427294	463134	497548	530647	562527	593274	622966	17	45
44	0	7.310617	7.351502	7.390545	7.427904	7.463719	7.498111	7.531189	7.563049	7.593778	7.623453	16	0
45	15	311314	352167	391181	428513	464303	498672	531729	563570	594281	623939	15	15
46	30	312011	352832	391816	429122	464887	499234	532270	564091	594784	624425	14	30
47	45	312708	353496	392452	429730	465471	499795	532810	564611	595286	624910	13	45
48	0	7.313403	7.354160	7.393086	7.430338	7.466054	7.500355	7.533349	7.565132	7.595788	7.625395	12	0
49	15	314098	354824	393720	430946	466637	500916	533889	565652	596290	625880	11	15
50	30	314793	355486	394354	431553	467220	501476	534428	566171	596792	626365	10	30
51	45	315487	356149	394987	432160	467802	502035	534966	566691	597293	626849	9	45
52	0	7.316181	7.356810	7.395620	7.432766	7.468384	7.502595	7.535505	7.567210	7.597794	7.627334	8	0
53	15	316874	357472	396252	433372	468965	503153	536043	567728	598284	627817	7	15
54	30	317566	358133	396884	433977	469546	503712	536581	568247	598795	628301	6	30
55	45	318258	358793	397516	434582	470127	504270	537118	568765	599295	628784	5	45
56	0	7.318950	7.359453	7.398147	7.435186	7.470707	7.504828	7.537655	7.569283	7.599795	7.629267	4	0
57	15	319640	360112	398777	435790	471287	505385	538192	569800	600294	629750	3	15
58	30	320331	360771	399407	436394	471866	505943	538728	570317	600794	630233	2	30
59	45	321020	361429	400037	436997	472445	506499	539264	570834	601292	630715	1	45
60	0	7.321709	7.362087	7.400666	7.437600	7.473024	7.507056	7.539800	7.571351	7.601791	7.631197	0	0
		39 ^m	38 ^m	37 ^m	36 ^m	35 ^m	34 ^m	33 ^m	32 ^m	31 ^m	30 ^m		

23 Ноча.

23 Ноча.

0 Hour.

Log. Haversines. (t)

0 Hour.

		30 ^m		31 ^m		32 ^m		33 ^m		34 ^m		35 ^m		36 ^m		37 ^m		38 ^m		39 ^m			
		7 deg.				8 deg.				9 deg.													
		30'	45'	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'	30'	45'
0	0	7.631197	7.659636	7.687169	7.713852	7.739736	7.764867	7.789287	7.813035	7.836147	7.858656	60											
1	15	631679	660102	687620	714290	740161	765279	789688	813425	836527	859026	59											
2	30	632160	660568	688072	714728	740586	765691	790089	813815	836907	859396	58											
3	45	632641	661034	688523	715165	741010	766104	790490	814205	837286	859766	57											
4	0	7.633122	7.661499	7.688974	7.715602	7.741434	7.766516	7.790890	7.814595	7.837666	7.860136	56											
5	15	633603	661964	689424	716039	741858	766928	791291	814985	838045	860505	55											
6	30	634083	662429	689875	716476	742282	767340	791691	815374	838424	860875	54											
7	45	634564	662894	690325	716912	742706	767751	792091	815763	838803	861244	53											
8	0	7.635043	7.663358	7.690775	7.717348	7.743129	7.768163	7.792491	7.816152	7.839182	7.861613	52											
9	15	635523	663822	691224	717784	743552	768574	792891	816541	839561	861982	51											
10	30	636002	664286	691674	718220	743975	768985	793290	816930	839939	862351	50											
11	45	636481	664750	692123	718656	744398	769396	793690	817318	840318	862719	49											
12	0	7.636960	7.665213	7.692572	7.719091	7.744821	7.769806	7.794089	7.817707	7.840696	7.863088	48											
13	15	637439	665676	693021	719526	745243	770216	794488	818095	841074	863456	47											
14	30	637917	666139	693469	719961	745666	770627	794887	818493	841452	863824	46											
15	45	638395	666602	693917	720396	746087	771037	795285	818871	841829	864192	45											
16	0	7.638873	7.667064	7.694365	7.720831	7.746509	7.771446	7.795684	7.819259	7.842207	7.864560	44											
17	15	639350	667526	694813	721265	746931	771856	796082	819646	842584	864928	43											
18	30	639827	667988	695261	721699	747352	772265	796480	820034	842961	865295	42											
19	45	640304	668450	695708	722133	747773	772675	796878	820421	843338	865663	41											
20	0	7.640781	7.668911	7.696155	7.722567	7.748194	7.773084	7.797275	7.820808	7.843715	7.866030	40											
21	15	641257	669372	696602	723000	748615	773492	797673	821195	844092	866397	39											
22	30	641734	669833	697049	723433	749036	773901	798070	821581	844468	866764	38											
23	45	642209	670294	697495	723866	749456	774309	798467	821968	844845	867131	37											
24	0	7.642685	7.670755	7.697941	7.724299	7.749876	7.774718	7.798864	7.822354	7.845221	7.867497	36											
25	15	643160	671215	698387	724731	750296	775126	799261	822740	845597	867864	35											
26	30	643636	671675	698833	725164	750716	775534	799658	823126	845973	868230	34											
27	45	644110	672134	699278	725596	751135	775941	800054	823512	846349	868596	33											
28	0	7.644585	7.672594	7.699724	7.726028	7.751555	7.776349	7.800450	7.823897	7.846724	7.868962	32											
29	15	645059	673053	700169	726459	751974	776756	800846	824283	847099	869328	31											
30	30	645533	673512	700614	726891	752393	777163	801242	824668	847475	869694	30											
31	45	646007	673971	701058	727322	752811	777570	801638	825053	847850	870059	29											
32	0	7.646481	7.674429	7.701502	7.727753	7.753230	7.777977	7.802034	7.825438	7.848225	7.870424	28											
33	15	646954	674887	701947	728184	753648	778383	802429	825823	848599	870790	27											
34	30	647427	675346	702390	728615	754066	778789	802824	826207	848974	871155	26											
35	45	647900	675803	702834	729045	754484	779195	803219	826592	849348	871520	25											
36	0	7.648372	7.676261	7.703278	7.729475	7.754902	7.779601	7.803614	7.826976	7.849723	7.871884	24											
37	15	648845	676718	703721	729905	755319	780007	804008	827360	850097	872249	23											
38	30	649317	677175	704164	730335	755737	780413	804403	827744	850470	872613	22											
39	45	649788	677632	704606	730765	756154	780818	804797	828128	850844	872978	21											
40	0	7.650260	7.678088	7.705049	7.731194	7.756571	7.781223	7.805191	7.828511	7.851218	7.873342	20											
41	15	650731	678545	705491	731623	756987	781628	805585	828895	851591	873706	19											
42	30	651202	679001	705933	732052	757404	782033	805979	829278	851964	874070	18											
43	45	651673	679457	706375	732481	757820	782437	806372	829661	852338	874433	17											
44	0	7.652143	7.679912	7.706817	7.732909	7.758236	7.782842	7.806766	7.830044	7.852711	7.874797	16											
45	15	652613	680367	707258	733337	758652	783246	807159	830426	853083	875160	15											
46	30	653083	680823	707699	733765	759068	783650	807552	830809	853456	875523	14											
47	45	653553	681277	708140	734193	759483	784054	807944	831191	853825	875886	13											
48	0	7.654022	7.681732	7.708581	7.734621	7.759899	7.784458	7.808337	7.831574	7.854201	7.876249	12											
49	15	654492	682186	709021	735048	760314	784861	808729	831956	854573	876612	11											
50	30	654961	682641	709462	735475	760729	785264	809122	832338	854945	876975	10											
51	45	655429	683095	709902	735902	761143	785667	809514	832719	855317	877337	9											
52	0	7.655898	7.683548	7.710342	7.736329	7.761558	7.786070	7.809906	7.833101	7.855688	7.877699	8											
53	15	656366	684002	710781	736756	761972	786473	810297	833482	856060	878061	7											
54	30	656834	684455	711221	737182	762386	786875	810689	833863	856431	878423	6											
55	45	657301	684908	711660	737608	762800	787278	811080	834244	856902	878785	5											
56	0	7.657769	7.685361	7.712099	7.738034	7.763214	7.787680	7.811472	7.834625	7.857173	7.879147	4											
57	15	658236	685813	712537	738460	763627	788082	811863	835006	857544	879505	3											
58	30	658703	686265	712976	738886	764041	788484	812254	835386	857915	879870	2											
59	45	659169	686717	713414	739311	764454	788885	812644	835767	858285	880231	1											
60	0	7.659636	7.687169	7.713852	7.739736	7.764867	7.789287	7.813035	7.836147	7.858656	7.880592	0											
		29 ^m	28 ^m	27 ^m	26 ^m	25 ^m	24 ^m	23 ^m	22 ^m	21 ^m	20 ^m												

23 Hours.

235

23 Hours.

0 Hour.

Log. Haversines. (t)

0 Hour.

	40 ^m	41 ^m	42 ^m	43 ^m	44 ^m	45 ^m	46 ^m	47 ^m	48 ^m	49 ^m	
	10 deg.				11 deg.				12 deg.		
0°	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'	0
0	7.880592	7.901984	7.922858	7.943237	7.963146	7.982604	8.001632	8.020248	8.038469	8.056312	60
1	15	880953	902336	923201	943573	963474	982925	001945	020553	038770	59
2	30	881314	902688	923545	943908	963801	983245	002259	020862	039070	58
3	45	881674	903040	923888	944244	964129	983565	002572	021168	039370	57
4	0	7.882035	7.903391	7.924231	7.944579	7.964457	7.983886	8.002886	8.021475	8.039670	56
5	15	882395	903743	924574	944914	964784	984206	003199	021781	039970	55
6	30	882755	904094	924917	945249	965111	984526	003512	022087	040270	54
7	45	883115	904445	925260	945584	965439	984846	003825	022394	040570	53
8	0	7.883475	7.904796	7.925603	7.945918	7.965766	7.985166	8.004137	8.022700	8.040870	52
9	15	883835	905147	925945	946253	966093	985485	004450	023006	041169	51
10	30	884194	905498	926288	946587	966420	985805	004763	023312	041469	50
11	45	884554	905849	926630	946922	966746	986124	005075	023617	041768	49
12	0	7.884913	7.906199	7.926972	7.947256	7.967073	7.986443	8.005388	8.023923	8.042067	48
13	15	885272	906550	927314	947590	967399	986763	005700	024229	042367	47
14	30	885631	906900	927656	947924	967726	987082	006012	024534	042666	46
15	45	885990	907250	927998	948258	968052	987401	006324	024839	042965	45
16	0	7.886349	7.907600	7.928339	7.948591	7.968378	7.987719	8.006636	8.025145	8.043264	44
17	15	886707	907950	928681	948925	968704	988038	006947	025450	043562	43
18	30	887066	908299	929022	949258	969030	988357	007259	025755	043861	42
19	45	887424	908649	929363	949592	969355	988675	007571	026060	044160	41
20	0	7.887782	7.908998	7.929705	7.949925	7.969681	7.988994	8.007882	8.026365	8.044458	40
21	15	888140	909347	930045	950258	970006	989312	008193	026669	044756	39
22	30	888497	909696	930386	950591	970332	989630	008505	026974	045055	38
23	45	888855	910045	930727	950923	970657	989948	008816	027278	045353	37
24	0	7.889213	7.910394	7.931067	7.951256	7.970982	7.990266	8.009127	8.027583	8.045651	36
25	15	889570	910743	931408	951588	971307	990584	009438	027887	045949	35
26	30	889927	911091	931748	951921	971632	990901	009748	028191	046247	34
27	45	890284	911440	932088	952253	971956	991219	010059	028495	046544	33
28	0	7.890641	7.911788	7.932428	7.952585	7.972281	7.991536	8.010370	8.028799	8.046842	32
29	15	890998	912136	932768	952917	972606	991853	010680	029103	047139	31
30	30	891354	912484	933108	953249	972930	992171	010990	029407	047437	30
31	45	891711	912832	933447	953581	973254	992488	011300	029710	047734	29
32	0	7.892067	7.913179	7.933787	7.953912	7.973578	7.992805	8.011611	8.030014	8.048031	28
33	15	892423	913527	934126	954244	973902	993122	011920	030317	048329	27
34	30	892779	913874	934465	954575	974226	993438	012230	030621	048626	26
35	45	893135	914222	934804	954906	974550	993755	012540	030924	048922	25
36	0	7.893491	7.914569	7.935143	7.955238	7.974873	7.994071	8.012850	8.031227	8.049219	24
37	15	893846	914916	935482	955568	975197	994388	013159	031530	049516	23
38	30	894202	915262	935821	955899	975520	994704	013469	031833	049813	22
39	45	894557	915609	936159	956230	975844	995020	013778	032136	050109	21
40	0	7.894912	7.915956	7.936497	7.956561	7.976167	7.995336	8.014087	8.032438	8.050405	20
41	15	895267	916302	936836	956891	976490	995652	014396	032741	050702	19
42	30	895622	916648	937174	957221	976813	995968	014705	033043	050998	18
43	45	895977	916994	937512	957552	977135	996283	015014	033346	051294	17
44	0	7.896331	7.917341	7.937850	7.957882	7.977458	7.996599	8.015323	8.033648	8.051590	16
45	15	896685	917686	938187	958212	977780	996914	015632	033950	051886	15
46	30	897040	918032	938525	958541	978103	997230	015940	034252	052182	14
47	45	897394	918378	938862	958871	978425	997545	016248	034554	052477	13
48	0	7.897748	7.918723	7.939200	7.959201	7.978747	7.997860	8.016557	8.034856	8.052773	12
49	15	898102	919068	939537	959530	979069	998175	016865	035157	053068	11
50	30	898455	919414	939874	959859	979391	998490	017173	035459	053364	10
51	45	898809	919759	940211	960189	979713	998804	017481	035760	053659	9
52	0	7.899162	7.920103	7.940548	7.960518	7.980035	7.999119	8.017789	8.036062	8.053954	8
53	15	899515	920448	940884	960847	980356	999434	018097	036363	054249	7
54	30	899868	920793	941221	961175	980678	999748	018404	036664	054544	6
55	45	900221	921137	941557	961504	980999	8.000062	018712	036965	054839	5
56	0	7.900574	7.921482	7.941894	7.961833	7.981320	8.000376	8.019019	8.037266	8.055134	4
57	15	900927	921826	942230	962161	981642	000690	019327	037567	055428	3
58	30	901279	922170	942566	962489	981962	001004	019634	037865	055723	2
59	45	901632	922514	942902	962818	982283	001318	019941	038169	056018	1
60	0	7.901984	7.922858	7.943237	7.963146	7.982604	8.001632	8.020248	8.038469	8.056312	0
19 ^m	18 ^m	17 ^m	16 ^m	15 ^m	14 ^m	13 ^m	12 ^m	11 ^m	10 ^m		

23 Hour.

23 Hour.

0 Hours.

Log. Haversines (t)

0 Hours.

		50 ^m	51 ^m	52 ^m	53 ^m	54 ^m	55 ^m	56 ^m	57 ^m	58 ^m	59 ^m			
		12 deg.			13 deg.			14 deg.						
N	W	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'	30'	45'	L
		0'	15'	30'	45'	0'	15'	30'	45'	0'	15'	30'	45'	
0	0	8.073792	8.090922	8.107718	8.124190	8.140352	8.156215	8.171789	8.187085	8.202112	8.216879	60		
1	15	074080	091205	107995	124462	140619	156477	172046	187337	202360	217123	59		
2	30	074368	091487	108272	124734	140886	156739	172303	187590	202608	217367	58		
3	45	074656	091770	108549	125005	141152	157000	172560	187842	202856	217611	57		
4	0	31' 08.074944	46' 09.2052	1' 08.08826	16' 8.125277	31' 8.141419	46' 8.157262	1' 8.172817	16' 8.188095	31' 8.203104	46' 8.217854	56		
5	15	075232	092334	109102	125549	141685	157524	173074	188347	203352	218098	55		
6	30	075520	092617	109379	125820	141952	157785	173331	188599	203600	218342	54		
7	45	075808	092899	109656	126091	142218	158046	173588	188851	203848	218585	53		
8	0	32' 08.076095	47' 08.093181	2' 08.109932	17' 8.126363	32' 8.142484	47' 8.158308	2' 8.173844	17' 8.189104	32' 8.204095	47' 8.218829	52		
9	15	076383	093463	110209	126634	142750	158569	174101	189356	204343	219072	51		
10	30	076670	093744	110485	126905	143016	158830	174357	189608	204591	219316	50		
11	45	076958	094026	110761	127176	143282	159091	174614	189859	204838	219559	49		
12	0	33' 08.077245	48' 08.094308	3' 08.111037	18' 8.127447	33' 8.143548	48' 8.159352	3' 8.174870	18' 8.190111	33' 8.205086	48' 8.219802	48		
13	15	077532	094589	111314	127718	143814	159613	175126	190363	205333	220045	47		
14	30	077819	094871	111590	127989	144080	159874	175382	190615	205580	220288	46		
15	45	078106	095152	111865	128259	144345	160135	175639	190866	205827	220531	45		
16	0	34' 08.078393	49' 08.095433	4' 08.112141	19' 8.128530	34' 8.144611	49' 8.160396	4' 8.175895	19' 8.191118	34' 8.206075	49' 8.220774	44		
17	15	078680	095714	112417	128800	144876	160656	176151	191369	206322	221017	43		
18	30	078967	095995	112693	129071	145142	160917	176406	191621	206569	221260	42		
19	45	079253	096276	112968	129341	145407	161177	176662	191872	206816	221503	41		
20	0	35' 08.079540	50' 08.096557	5' 08.113244	20' 8.129611	35' 8.145672	50' 8.161438	5' 8.176918	20' 8.192123	35' 8.207062	50' 8.221745	40		
21	15	079826	096838	113519	129882	145937	161698	177174	192374	207309	221988	39		
22	30	080113	097119	113794	130152	146203	161958	177429	192625	207556	222230	38		
23	45	080399	097399	114069	130422	146468	162218	177685	192876	207803	222473	37		
24	0	36' 08.080685	51' 08.097680	6' 08.114345	21' 8.130692	36' 8.146733	51' 8.162479	6' 8.177940	21' 8.193127	36' 8.208049	51' 8.222715	36		
25	15	080971	097960	114620	130961	146997	162738	178195	193378	208296	222957	35		
26	30	081257	098241	114895	131231	147262	162998	178451	193629	208542	223200	34		
27	45	081543	098521	115169	131501	147527	163258	178706	193879	208788	223442	33		
28	0	37' 08.081828	52' 08.098801	7' 08.115444	22' 8.131770	37' 8.147791	52' 8.163518	7' 8.178961	22' 8.194130	37' 8.209035	52' 8.223684	32		
29	15	082114	099081	115719	132040	148056	163778	179216	194381	209281	223926	31		
30	30	082400	099361	115993	132309	148320	164037	179471	194631	209527	224168	30		
31	45	082685	099641	116268	132579	148585	164297	179726	194881	209773	224410	29		
32	0	38' 08.082970	53' 08.099921	8' 08.116542	23' 8.132848	38' 8.148849	53' 8.164556	8' 8.179981	23' 8.195132	38' 8.210019	53' 8.224652	28		
33	15	083256	100200	116817	133117	149113	164816	180235	195382	210265	224893	27		
34	30	083541	100480	117091	133386	149377	165075	180490	195632	210511	225135	26		
35	45	083826	100759	117365	133655	149641	165334	180745	195882	210757	225377	25		
36	0	39' 08.084111	54' 08.101039	9' 08.117639	24' 8.133924	39' 8.149905	54' 8.165593	9' 8.180999	24' 8.196132	39' 8.211003	54' 8.225618	24		
37	15	084396	101318	117913	134193	150169	165852	181254	196382	211248	225860	23		
38	30	084681	101597	118187	134461	150433	166111	181508	196632	211494	226101	22		
39	45	084965	101876	118461	134730	150696	166370	181762	196882	211739	226343	21		
40	0	40' 08.085250	55' 08.102156	10' 08.118734	25' 8.134999	40' 8.150960	55' 8.166629	10' 8.182016	25' 8.197132	40' 8.211985	55' 8.226584	20		
41	15	085534	102434	119008	135267	151223	166888	182270	197382	212230	226825	19		
42	30	085819	102713	119282	135535	151487	167146	182525	197631	212475	227066	18		
43	45	086103	102992	119555	135804	151750	167405	182778	197881	212721	227307	17		
44	0	41' 08.086387	56' 08.103271	11' 08.119828	26' 8.136072	41' 8.152013	56' 8.167663	11' 8.183032	26' 8.198130	41' 8.212966	56' 8.227548	16		
45	15	086671	103549	120102	136340	152277	167922	183286	198380	213211	227789	15		
46	30	086956	103828	120375	136608	152540	168180	183540	198629	213456	228030	14		
47	45	087239	104106	120648	136876	152803	168439	183794	198878	213701	228271	13		
48	0	42' 08.087523	57' 08.104385	12' 08.120921	27' 8.137144	42' 8.153066	57' 8.168697	12' 8.184047	27' 8.199127	42' 8.213946	57' 8.228512	12		
49	15	087807	104663	121194	137412	153328	168955	184301	199376	214191	228752	11		
50	30	088091	104941	121467	137680	153591	169213	184554	199625	214435	228993	10		
51	45	088374	105219	121739	137947	153854	169471	184808	199874	214680	229234	9		
52	0	43' 08.088658	58' 08.105497	13' 08.122012	28' 8.138215	43' 8.154117	58' 8.169729	13' 8.185061	28' 8.200123	43' 8.214925	58' 8.229474	8		
53	15	088941	105775	122285	138482	154379	169986	185314	200372	215169	229714	7		
54	30	089224	106053	122557	138750	154642	170244	185567	200621	215414	229955	6		
55	45	089508	106330	122829	139017	154904	170502	185820	200869	215658	230195	5		
56	0	44' 08.089791	59' 08.106608	14' 08.123102	29' 8.139284	44' 8.155166	59' 8.170759	14' 8.186073	29' 8.201118	44' 8.215902	59' 8.230435	4		
57	15	090074	106885	123374	139551	155429	171017	186326	201366	216147	230675	3		
58	30	090357	107163	123646	139818	155691	171274	186579	201615	216391	230915	2		
59	45	090639	107440	123918	140085	155953	171532	186832	201863	216635	231155	1		
60	0	090922	8.107718	8.124190	8.140352	8.156215	8.171789	8.187085	8.202112	8.216879	8.231395	0		
		9 ^m	8 ^m	7 ^m	6 ^m	5 ^m	4 ^m	3 ^m	2 ^m	1 ^m	0 ^m	L		

23 Hours.

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23 Hours

0 ^m 1 ^m 2 ^m 3 ^m 4 ^m 5 ^m 6 ^m 7 ^m 8 ^m 9 ^m																				
15 deg.							16 deg.							17 deg.						
0	0	8.231395	8.245669	8.259708	8.273519	8.287111	8.300488	8.313659	8.326629	8.339404	8.351990	8.364392	8.376615	8.388665	8.399805					
1	15	231635	245905	259940	273748	287335	300710	313877	326844	339615	352198	364598	376825	388875	399899					
2	30	231875	246141	260172	273976	287560	300931	314095	327058	339827	352406	364808	377035	389085	399999					
3	45	232115	246376	260404	274204	287784	301152	314312	327272	340038	352614	365016	377243	389293	399999					
4	0	8.232354	8.246612	8.260636	8.274432	8.288009	8.301373	8.314530	8.327487	8.340249	8.352822	8.365215	8.377428	8.389460	8.399999					
5	15	232594	246848	260867	274660	288233	301594	314747	327701	340460	353031	365425	377648	389698	8.399999					
6	30	232833	247083	261099	274888	288458	301815	314965	327915	340671	353238	365634	377857	389907	8.399999					
7	45	233073	247319	261331	275116	288682	302035	315182	328129	340882	353446	365843	378066	389999	8.399999					
8	0	8.233312	8.247554	8.261562	8.275344	8.288906	8.302256	8.315400	8.328344	8.341093	8.353654	8.366047	8.378270	8.390320	8.399999					
9	15	233552	247790	261794	275572	289131	302477	315617	328558	341304	353862	366257	378480	390530	8.399999					
10	30	233791	248025	262025	275800	289355	302698	315835	328772	341515	354070	366466	378689	390750	8.399999					
11	45	234030	248260	262257	276027	289579	302918	316052	328986	341726	354277	366673	378900	390969	8.399999					
12	0	8.234269	8.248493	8.262488	8.276255	8.289803	8.303139	8.316269	8.329200	8.341936	8.354485	8.366878	8.379110	8.391170	8.399999					
13	15	234508	248730	262719	276483	290027	303359	316486	329413	342147	354692	367088	379320	391380	8.399999					
14	30	234747	248965	262951	276710	290251	303580	316703	329627	342358	354900	367296	379531	391590	8.399999					
15	45	234986	249200	263182	276938	290475	303800	316920	329841	342568	355107	367504	379746	391800	8.399999					
16	0	8.235225	8.249435	8.263413	8.277165	8.290699	8.304021	8.317137	8.330055	8.342779	8.355315	8.367754	8.380087	8.392210	8.399999					
17	15	235464	249670	263644	277392	290922	304241	317354	330268	342989	355522	367960	380293	392416	8.399999					
18	30	235703	249905	263875	277620	291146	304461	317571	330482	343200	355730	368168	380503	392626	8.399999					
19	45	235941	250140	264106	277847	291370	304681	317788	330695	343410	355937	368375	380713	392836	8.399999					
20	0	8.236180	8.250374	8.264337	8.278074	8.291593	8.304901	8.318004	8.330909	8.343620	8.356144	8.368583	8.380917	8.393140	8.399999					
21	15	236418	250609	264567	278301	291817	305121	318221	331122	343830	356351	368790	381124	393350	8.399999					
22	30	236657	250843	264798	278528	292040	305341	318438	331336	344041	356558	369007	381334	393560	8.399999					
23	45	236895	251078	265029	278755	292264	305561	318654	331549	344251	356766	369217	381544	393770	8.399999					
24	0	8.237133	8.251312	8.265259	8.278982	8.292487	8.305781	8.318871	8.331762	8.344461	8.356973	8.369407	8.381751	8.393984	8.399999					
25	15	237372	251547	265490	279209	292710	306001	319087	331975	344671	357180	369624	382068	394194	8.399999					
26	30	237610	251781	265720	279436	292933	306221	319304	332189	344881	357386	369830	382282	394404	8.399999					
27	45	237848	252015	265951	279662	293157	306440	319520	332402	345091	357593	369944	382492	394614	8.399999					
28	0	8.238086	8.252249	8.266181	8.279889	8.293380	8.306660	8.319736	8.332615	8.345301	8.357800	8.370213	8.382547	8.394790	8.399999					
29	15	238324	252483	266411	280115	293603	306880	319953	332828	345511	358007	370420	382754	394900	8.399999					
30	30	238562	252717	266642	280342	293826	307099	320169	333041	345720	358214	370634	382964	395110	8.399999					
31	45	238800	252951	266872	280568	294049	307319	320385	333254	345930	358420	370844	383174	395320	8.399999					
32	0	8.239038	8.253185	8.267162	8.280795	8.294272	8.307538	8.320601	8.333466	8.346140	8.358627	8.371028	8.383342	8.395565	8.399999					
33	15	239275	253419	267332	281021	294494	307757	320817	333679	346349	358833	371247	383561	395775	8.399999					
34	30	239513	253653	267562	281248	294717	307977	321033	333892	346559	359040	371461	383775	395985	8.399999					
35	45	239751	253886	267792	281474	294940	308196	321249	334105	346769	359246	371675	383985	396195	8.399999					
36	0	8.239988	8.254120	8.268022	8.281700	8.295162	8.308415	8.321465	8.334317	8.346978	8.359453	8.371842	8.384146	8.396359	8.399999					
37	15	240226	254354	268251	281926	295385	308634	321681	334530	347187	359659	372072	384386	396599	8.399999					
38	30	240463	254587	268481	282152	295608	308853	321896	334742	347397	359872	372286	384599	396809	8.399999					
39	45	240700	254820	268711	282378	295830	309073	322112	334955	347606	360072	372500	384813	397019	8.399999					
40	0	8.240938	8.255054	8.268940	8.282604	8.296052	8.309291	8.322328	8.335167	8.347815	8.360278	8.372657	8.384951	8.397160	8.399999					
41	15	241175	255287	269170	282830	296275	309510	322543	335379	348025	360484	372863	385167	397370	8.399999					
42	30	241412	255520	269399	283056	296497	309729	322759	335592	348234	360690	373077	385380	397580	8.399999					
43	45	241649	255754	269629	283282	296719	309948	322974	335804	348443	360896	373291	385594	397790	8.399999					
44	0	8.241886	8.255987	8.269858	8.283507	8.296941	8.310167	8.323190	8.336016	8.348652	8.361197	8.373652	8.386017	8.398292	8.399999					
45	15	242123	256220	270087	283733	297164	310385	323405	336228	348861	361308	373763	386128	398403	8.399999					
46	30	242360	256453	270317	283959	297386	310604	323620	336440	349070	361514	374069	386383	398613	8.399999					
47	45	242597	256686	270546	284184	297608	310823	323836	336652	349279	361720	374283	386597	398823	8.399999					
48	0	8.242833	8.256919	8.270775	8.284410	8.297830	8.311041	8.324051	8.336864	8.349488	8.361926	8.374279	8.386547	8.398720	8.399999					
49	15	243070	257151	271004	284635	298051	311260	324266	337076	349696	362132	374585	386938	399191	8.399999					
50	30	243307	257384	271233	284860	298273	311478	324481	337288	349905	362338	374791	387144	399404	8.399999					
51	45	243543	257617	271462	285086	298495	311696	324696	337500	350114	362543	374996	387349	399613	8.399999					
52	0	8.243780	8.257849	8.271691	8.285311	8.298717	8.311915	8.324911	8.337712	8.350323	8.362749	8.375080	8.387325	8.399485	8.399999					
53	15	244016	258082	271919	285536	298938	312133	325126	337924	350531	362954	375295	387540	399700	8.399999					
54	30	244252	258314	272148	285761	299160	312351	325341	338135	350740	363160	375501	387755	399910	8.399999					
55	45	244489	258547	272377	285986	299382	312569	325556	338347	350948	363365	375715	387969	399999	8.399999					
56	0	8.244725	8.258779	8.272606	8.286211	8.299603	8.312787	8.325771	8.338558	8.351157	8.363571	8.375890	8.388125	8.399265	8.399999					
57	15	244961	259011	272834	286436	299824	313005	325985	338770	351365	363776	376095	388330	399485	8.399999					
58	30	245197	259244	273063	286661	300046	313223	326200	338981	351573	363981	376300	388535	399690	8.399999					
59	45	245433	259476	273291	286886	300267	313441	326414	339193	351782	364187	376509	388745	399899	8.399999					
60	0	8.245669	8.259708	8.273519	8.287111	8.300488	8.313659	8.326629	8.339404	8.351990	8.364392	8.376615	8.388665	8.399805	8.399999					
59 ^m 58 ^m 57 ^m 56 ^m 55 ^m 54 ^m 53 ^m 52 ^m 51 ^m 50 ^m																				

1 Hour.

Log. Haversines. (t)

1 Hour.

Lat.	10 ^m		11 ^m	12 ^m	13 ^m	14 ^m	15 ^m	16 ^m	17 ^m	18 ^m	19 ^m	Lat.						
	17 deg.		18 deg.					19 deg.										
0	30'	36.4392	45'	3.376615	0'	3.388665	15'	8.400546	30'	8.412262	45'	8.423818	8.435218	8.446467	8.457568	8.468524	60	
1	15	364597	376817	388864	400742	412456	424009	435407	446653	457752	468706	479559	490311	500964	511616	522268	532919	59
2	30	364802	377020	389064	400939	412650	424201	435796	446839	457935	468887	479739	490491	501242	512000	522757	533514	58
3	45	365007	377222	389263	401135	412843	424392	435784	447026	458119	469068	479819	490570	501321	512072	522823	533574	57
4	0	31'	365212	8.377424	1'	3.389462	16'	8.401332	31'	8.413037	46'	8.424583	8.435973	8.447212	8.458303	8.469250	56	
5	15	365417	377626	389661	401528	413231	424774	436162	447398	458486	469431	479933	490884	501835	512786	523737	534688	55
6	30	365622	377828	389860	401724	413425	424965	436350	447584	458670	469612	479914	490615	501316	512017	522718	533419	54
7	45	365827	378030	390060	401921	413618	425156	436539	447770	458853	469793	479995	490696	501397	512098	522799	533500	53
8	0	32'	366032	8.378232	2'	3.390259	17'	8.402117	32'	8.413812	47'	8.425347	8.436727	8.447956	8.459037	8.469975	52	
9	15	366237	378434	390458	402313	414005	425538	436915	448142	459220	470156	480907	491658	502409	513160	523911	534662	51
10	30	366441	378635	390657	402510	414199	425729	437104	448327	459404	470337	481088	491839	502590	513341	524092	534843	50
11	45	366646	378837	390855	402706	414392	425920	437292	448513	459587	470518	481269	492020	502771	513522	524273	535024	49
12	0	33'	366851	8.379039	3'	3.391054	18'	8.402902	33'	8.414586	48'	8.426110	8.437480	8.448699	8.459771	8.470699	48	
13	15	367055	379241	391253	403098	414779	426301	437668	448885	459954	470880	481631	492382	503133	513884	524635	535386	47
14	30	367260	379442	391452	403294	414972	426492	437857	449070	460137	471061	481812	492563	503314	514065	524816	535567	46
15	45	367464	379644	391651	403490	415166	426682	438045	449256	460320	471241	482000	492751	503502	514253	525004	535755	45
16	0	34'	367669	8.379845	4'	3.391849	19'	8.403686	34'	8.415359	49'	8.426873	8.438233	8.449442	8.460504	8.471422	44	
17	15	367873	380047	392048	403882	415552	427064	438421	449627	460687	471603	482354	493105	503856	514607	525358	536109	43
18	30	368077	380248	392247	404077	415745	427254	438609	449813	460870	471784	482535	493286	504037	514788	525539	536290	42
19	45	368282	380450	392445	404273	415938	427445	438797	449998	461053	471965	482716	493467	504218	514969	525720	536471	41
20	0	35'	368486	8.380651	5'	3.392644	20'	8.404469	35'	8.416131	50'	8.427635	8.438985	8.450184	8.461236	8.472145	40	
21	15	368690	380852	392842	404665	416324	427826	439172	450369	461419	472326	483077	493828	504579	515330	526081	536832	39
22	30	368894	381053	393040	404860	416517	428016	439360	450554	461602	472506	483257	494008	504759	515510	526261	537012	38
23	45	369098	381255	393239	405056	416710	428206	439548	450740	461785	472687	483438	494189	504940	515691	526442	537193	37
24	0	36'	369302	8.381456	6'	3.393437	21'	8.405252	36'	8.416903	51'	8.428397	8.439736	8.450925	8.461968	8.472865	36	
25	15	369506	381657	393635	405447	417096	428587	439924	451110	462150	473048	483799	494540	505291	516042	526793	537544	35
26	30	369710	381858	393834	405643	417289	428777	440111	451295	462333	473228	483979	494720	505471	516222	526973	537724	34
27	45	369914	382059	394032	405838	417482	428967	440299	451480	462516	473409	484160	494911	505662	516413	527164	537915	33
28	0	37'	370118	8.382260	7'	3.394230	22'	8.406033	37'	8.417674	52'	8.429157	8.440486	8.451666	8.462699	8.473589	32	
29	15	370322	382461	394428	406229	417867	429347	440674	451851	462881	473770	484521	495272	506023	516774	527525	538276	31
30	30	370526	382661	394626	406424	418060	429537	440862	452036	463064	473950	484699	495450	506201	516952	527703	538454	30
31	45	370729	382862	394824	406619	418252	429727	441049	452221	463247	474130	484879	495630	506381	517132	527883	538634	29
32	0	38'	370933	8.383063	8'	3.395022	23'	8.406814	38'	8.418445	53'	8.429917	8.441236	8.452406	8.463429	8.474310	28	
33	15	371137	383264	395220	407010	418637	430107	441424	452591	463612	474490	485139	495890	506641	517392	528143	538894	27
34	30	371340	383464	395418	407205	418830	430297	441611	452775	463794	474671	485419	496170	506921	517672	528423	539174	26
35	45	371544	383665	395615	407400	419022	430487	441798	452960	463976	474851	485597	496348	507099	517850	528601	539352	25
36	0	39'	371747	8.383866	9'	3.395813	24'	8.407595	39'	8.419214	54'	8.430677	8.441986	8.453145	8.464159	8.475031	24	
37	15	371950	384066	396011	407790	419407	430866	442173	453330	464341	475211	485962	496713	507464	518215	528966	539717	23
38	30	372154	384267	396209	407985	419599	431056	442360	453515	464524	475391	486142	496893	507644	518395	529146	539897	22
39	45	372357	384467	396406	408180	419791	431246	442547	453699	464706	475571	486322	497073	507824	518575	529326	540077	21
40	0	40'	372560	8.384667	10'	3.396604	25'	8.408374	40'	8.419983	55'	8.431435	8.442734	8.453884	8.464888	8.475751	20	
41	15	372764	384868	396801	408569	420176	431625	442921	454068	465070	475930	486681	497432	508183	518934	529685	540436	19
42	30	372967	385068	396999	408764	420368	431814	443108	454253	465252	476110	486861	497612	508363	519114	529865	540616	18
43	45	373170	385268	397196	409599	420560	432004	443295	454437	465434	476290	487041	497792	508543	519294	530045	540796	17
44	0	41'	373373	8.385468	11'	3.397394	26'	8.409153	41'	8.420752	56'	8.432193	8.443482	8.454622	8.465617	8.476470	16	
45	15	373576	385668	397591	409348	420944	432383	443669	454806	465799	476649	487400	498151	508902	519653	530404	541155	15
46	30	373779	385869	397788	409542	421136	432572	443856	454991	465981	476829	487580	498331	509082	519833	530584	541335	14
47	45	373982	386069	397985	409737	421328	432761	444043	455175	466162	477009	487760	498511	509262	520013	530764	541515	13
48	0	42'	374185	8.386269	12'	3.398183	27'	8.409931	42'	8.421519	57'	8.432951	8.444229	8.455359	8.466344	8.477188	12	
49	15	374387	386469	398380	410126	421711	433140	444416	455544	466526	477368	488119	498870	509621	520372	531123	541874	11
50	30	374590	386668	398577	410320	421903	433329	444603	455728	466708	477547	488298	499049	509800	520551	531302	542053	10
51	45	374793	386868	398774	410515	422095	433518	444789	455912	466890	477727	488478	499229	510000	520751	531502	542253	9
52	0	43'	374996	8.387068	13'	3.398971	28'	8.410709	43'	8.422286	58'	8.433707	8.444976	8.456096	8.467072	8.477906	8	
53	15	375198	387268	399168	410903	422478	433896	445162	456280	467253	478086	488837	499588	510339	521090	531841	542592	7
54	30	375401	387468	399365	411097	422669	434085	445349	456464	467435	478265	489016	499767	510518	521269	532020	542771	6
55	45	375603	387667	399562	411292	422861	434274	445535	456568	467617	478444	489195	499946	510697	521448	532199	542950	5
56	0	44'	375806	8.387867	14'	3.399759	29'	8.411486	44'	8.423053	59'	8.434463	8.445722	8.456832	8.467798	8.478624	4	
57	15	376008	388066	399955	411680	423244	434652	445908	457016	467980	478803	489554	500305	511056	521807	532558	543309	3
58	30	376211	388266	400152	411874	423435	434841	446095	457200	468162	478982	489733	500484	511235	521986	532737	543488	2
59	45	376413	388465	400349	412068	423627	435030	446281	457384	468343	479161	489912	500663	511414	522165	532916	543667	1
60	0	45'	376615	8.388665	15'	3.400546	30'	8.412262	45'	8.423818	60'	8.435218	8.446467	8.457568	8.468524	8.479340	0	
Lat.		49 ^m	48 ^m	47 ^m	46 ^m	45 ^m	44 ^m	43 ^m	42 ^m	41 ^m	40 ^m							Lat.

32 Hours.

237

22 Hours.

1 Hora.

Log. Haversines. (t)

1 Hora.

	20 ^m	21 ^m	22 ^m	23 ^m	24 ^m	25 ^m	26 ^m	27 ^m	28 ^m	29 ^m	
	20 deg.				21 deg.				22 deg.		
0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0
41	0	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0	0	0	0	0
47	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0	0
55	0	0	0	0	0	0	0	0	0	0	0
56	0	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0
61	0	0	0	0	0	0	0	0	0	0	0
62	0	0	0	0	0	0	0	0	0	0	0
63	0	0	0	0	0	0	0	0	0	0	0
64	0	0	0	0	0	0	0	0	0	0	0
65	0	0	0	0	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0	0	0	0	0
67	0	0	0	0	0	0	0	0	0	0	0
68	0	0	0	0	0	0	0	0	0	0	0
69	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0
71	0	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0	0
73	0	0	0	0	0	0	0	0	0	0	0
74	0	0	0	0	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	0	0	0	0
76	0	0	0	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0	0
79	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0
81	0	0	0	0	0	0	0	0	0	0	0
82	0	0	0	0	0	0	0	0	0	0	0
83	0	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	0	0	0	0
85	0	0	0	0	0	0	0	0	0	0	0
86	0	0	0	0	0	0	0	0	0	0	0
87	0	0	0	0	0	0	0	0	0	0	0
88	0	0	0	0	0	0	0	0	0	0	0
89	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0
91	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0	0
93	0	0	0	0	0	0	0	0	0	0	0
94	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0	0
97	0	0	0	0	0	0	0	0	0	0	0
98	0	0	0	0	0	0	0	0	0	0	0
99	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0

22 Hora.

23 Hora.

1 Hour.

Log. Havensine. (1)

1 Hour.

	30"	31"	32"	33"	34"	35"	36"	37"	38"	39"	
	22 deg.			23 deg.			24 deg.				
0	0	0	0	0	0	0	0	0	0	0	0
1	15	580630	590101	599466	608727	617885	626945	635906	644772	653545	662225
2	30	580789	590258	599621	608880	618037	627093	636055	644919	653690	662369
3	45	580948	590415	599776	609033	618189	627245	636203	645066	653836	662513
4	0	581106	590572	599931	609187	618341	627395	636352	645213	653981	662657
5	15	581265	590729	600086	609340	618492	627545	636500	645360	654126	662801
6	30	581424	590886	600242	609494	618644	627695	636649	645507	654272	662945
7	45	581582	591041	600396	609647	618796	627845	636797	645654	654417	663088
8	0	581741	591199	600552	609800	618947	627993	636946	645801	654562	663232
9	15	581899	591356	600706	609954	619099	628145	637094	645947	654707	663376
10	30	582058	591513	600862	610107	619251	628295	637242	646094	654853	663520
11	45	582216	591669	601016	610260	619402	628445	637391	646241	654998	663663
12	0	582375	591826	601171	610413	619554	628595	637539	646388	655143	663807
13	15	582533	591982	601326	610566	619705	628745	637687	646534	655288	663951
14	30	582691	592139	601481	610720	619857	628895	637835	646681	655433	664094
15	45	582850	592296	601636	610873	620008	629044	637984	646828	655578	664238
16	0	583008	592452	601791	611026	620160	629194	638132	646974	655723	664381
17	15	583166	592609	601945	611179	620311	629344	638280	647121	655868	664525
18	30	583325	592765	602100	611332	620462	629494	638428	647267	656014	664668
19	45	583483	592922	602255	611485	620614	629643	638576	647414	656158	664812
20	0	583641	593078	602410	611638	620765	629793	638724	647560	656304	664955
21	15	583799	593234	602564	611791	620916	629943	638872	647707	656448	665099
22	30	583957	593391	602719	611944	621067	630092	639020	647853	656593	665243
23	45	584115	593547	602873	612097	621219	630242	639168	648000	656738	665386
24	0	584273	593703	603028	612249	621370	630391	639316	648146	656883	665529
25	15	584431	593860	603182	612402	621521	630541	639464	648292	657028	665672
26	30	584589	594016	603337	612555	621672	630691	639612	648439	657173	665816
27	45	584747	594172	603491	612708	621823	630840	639760	648585	657317	665959
28	0	584905	594328	603646	612861	621974	630989	639908	648731	657462	666102
29	15	585063	594484	603800	613013	622125	631139	640056	648878	657607	666245
30	30	585221	594641	603955	613166	622276	631288	640203	649024	657752	666389
31	45	585379	594797	604109	613319	622427	631438	640351	649170	657896	666532
32	0	585537	594953	604263	613471	622578	631587	640499	649316	658041	666675
33	15	585695	595109	604418	613624	622729	631736	640647	649464	658186	666818
34	30	585853	595265	604572	613776	622880	631886	640794	649609	658330	666961
35	45	586010	595421	604726	613929	623031	632035	640942	649755	658475	667104
36	0	586168	595577	604880	614081	623182	632184	641090	649901	658620	667247
37	15	586326	595733	605033	614234	623333	632333	641237	650047	658764	667390
38	30	586483	595888	605189	614386	623484	632482	641385	650193	658909	667533
39	45	586641	596044	605343	614539	623634	632632	641532	650339	659053	667676
40	0	586799	596200	605497	614691	623785	632781	641680	650485	659198	667819
41	15	586956	596356	605651	614844	623936	632930	641828	650631	659342	667962
42	30	587114	596512	605805	614996	624087	633079	641975	650777	659486	668105
43	45	587271	596667	605959	615148	624237	633228	642123	650923	659631	668248
44	0	587429	596823	606113	615301	624388	633377	642270	651069	659775	668391
45	15	587586	596979	606267	615453	624539	633526	642417	651214	659919	668534
46	30	587743	597135	606421	615605	624689	633675	642565	651360	660064	668677
47	45	587901	597290	606575	615757	624840	633824	642712	651506	660208	668819
48	0	588058	597446	606729	615910	624990	633973	642859	651652	660352	668962
49	15	588215	597601	606883	616062	625141	634122	643007	651798	660497	669105
50	30	588373	597757	607036	616214	625291	634271	643154	651943	660641	669248
51	45	588530	597912	607190	616366	625442	634419	643301	652089	660785	669390
52	0	588687	598068	607344	616518	625592	634568	643449	652235	660929	669533
53	15	588844	598223	607498	616670	625742	634717	643596	652380	661073	669676
54	30	589002	598375	607651	616822	625893	634866	643743	652526	661217	669818
55	45	589159	598534	607805	616974	626043	635014	643890	652672	661361	669961
56	0	589316	598689	607959	617126	626194	635163	644037	652817	661505	670103
57	15	589473	598845	608112	617278	626344	635312	644184	652963	661649	670246
58	30	589630	599000	608266	617430	626494	635461	644331	653108	661793	670389
59	45	589787	599155	608419	617582	626644	635609	644478	653254	661937	670531
60	0	589944	599311	608573	617734	626795	635758	644625	653399	662081	670674

22 Hours.

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22 Hours.

		40 ^m	41 ^m	42 ^m	43 ^m	44 ^m	45 ^m	46 ^m	47 ^m	48 ^m
		25 deg.					26 deg.			27 de
0	0'	8.670674	8.579177	8.687595	8.695927	8.704176	8.712343	8.720431	8.728439	8.736371
15	15'	670816	679318	687734	696065	704313	712479	720565	728572	736502
230	230'	670958	679459	687874	696203	704450	712614	720699	728705	736634
345	345'	671101	679600	688013	696341	704586	712750	720833	728838	736765
4	4'	8.671243	8.679741	8.688153	8.696479	8.704723	8.712885	8.720967	8.728970	8.736897
515	515'	671385	679882	688292	696618	704860	713020	721101	729103	737028
630	630'	671528	680023	688432	696756	704996	713156	721235	729236	737159
745	745'	671670	680164	688571	696894	705133	713291	721369	729368	737291
8	8'	8.671812	8.680305	8.688710	8.697032	8.705270	8.713426	8.721503	8.729501	8.737422
915	915'	671955	680445	688850	697170	705406	713562	721637	729634	737554
1030	1030'	672097	680586	688989	697308	705543	713697	721771	729766	737685
1145	1145'	672239	680727	689128	697445	705679	713832	721905	729899	737816
12	12'	8.672381	8.680868	8.689268	8.697583	8.705816	8.713967	8.722039	8.730032	8.737948
1315	1315'	672523	681008	689407	697721	705952	714102	722172	730164	738079
1430	1430'	672666	681149	689546	697859	706089	714238	722306	730297	738210
1545	1545'	672808	681290	689685	697997	706225	714373	722440	730429	738341
16	16'	8.672950	8.681430	8.689825	8.698135	8.706362	8.714508	8.722574	8.730562	8.738473
1715	1715'	673092	681571	689964	698273	706498	714643	722708	730694	738604
1830	1830'	673234	681711	690103	698410	706635	714778	722841	730827	738735
1945	1945'	673376	681852	690242	698548	706771	714913	722975	730959	738866
20	20'	8.673518	8.681993	8.690381	8.698686	8.706908	8.715048	8.723109	8.731092	8.738997
2115	2115'	673660	682133	690520	698824	707044	715183	723242	731224	739128
2230	2230'	673802	682274	690660	698961	707180	715318	723376	731356	739260
2345	2345'	673944	682414	690799	699099	707316	715453	723510	731489	739391
24	24'	8.674086	8.682555	8.690938	8.699237	8.707453	8.715588	8.723643	8.731621	8.739522
2515	2515'	674227	682695	691077	699374	707589	715723	723777	731753	739653
2630	2630'	674369	682835	691216	699512	707725	715858	723911	731886	739784
2745	2745'	674511	682976	691354	699649	707861	715993	724044	732018	739915
28	28'	8.674653	8.683116	8.691493	8.699787	8.707998	8.716127	8.724178	8.732150	8.740046
2915	2915'	674795	683256	691632	699924	708134	716262	724311	732282	740177
3030	3030'	674936	683397	691771	700062	708270	716397	724445	732414	740308
3145	3145'	675078	683537	691910	700199	708406	716532	724578	732547	740438
32	32'	8.675220	8.683677	8.692049	8.700337	8.708542	8.716667	8.724712	8.732679	8.740569
3315	3315'	675361	683817	692188	700474	708678	716801	724845	732811	740700
3430	3430'	675503	683958	692327	700612	708814	716936	724978	732943	740831
3545	3545'	675645	684098	692465	700749	708950	717071	725112	733075	740962
36	36'	8.675786	8.684238	8.692604	8.700886	8.709086	8.717205	8.725245	8.733207	8.741093
3715	3715'	675928	684378	692743	701024	709222	717340	725378	733339	741223
3830	3830'	676069	684518	692881	701161	709358	717475	725512	733471	741354
3945	3945'	676211	684658	693020	701298	709494	717609	725645	733603	741485
40	40'	8.676352	8.684798	8.693159	8.701436	8.709630	8.717744	8.725778	8.733735	8.741616
4115	4115'	676494	684938	693297	701573	709766	717878	725912	733867	741746
4230	4230'	676635	685078	693436	701710	709902	718013	726045	733999	741877
4345	4345'	676777	685218	693575	701847	710038	718147	726178	734131	742008
44	44'	8.676918	8.685358	8.693713	8.701984	8.710173	8.718282	8.726311	8.734263	8.742138
4515	4515'	677060	685498	693852	702121	710309	718416	726444	734395	742269
4630	4630'	677201	685638	693990	702259	710445	718551	726578	734527	742400
4745	4745'	677342	685778	694129	702396	710581	718685	726711	734659	742530
48	48'	8.677484	8.685918	8.694267	8.702533	8.710716	8.718820	8.726844	8.734790	8.742661
4915	4915'	677625	686058	694406	702670	710852	718954	726977	734922	742791
5030	5030'	677766	686198	694544	702807	710988	719088	727110	735054	742922
5145	5145'	677907	686337	694682	702944	711123	719223	727243	735186	743052
52	52'	8.678049	8.686477	8.694821	8.703081	8.711259	8.719357	8.727376	8.735317	8.743183
5315	5315'	678190	686617	694959	703218	711395	719491	727509	735449	743313
5430	5430'	678331	686757	695097	703355	711530	719626	727642	735581	743444
5545	5545'	678472	686896	695236	703492	711666	719760	727775	735712	743574
56	56'	8.678613	8.687036	8.695374	8.703629	8.711801	8.719894	8.727908	8.735844	8.743705
5715	5715'	678754	687176	695512	703765	711937	720028	728041	735976	743835
5830	5830'	678895	687315	695651	703902	712073	720162	728174	736107	743965
5945	5945'	679036	687455	695789	704039	712208	720297	728306	736239	744096
60	60'	8.679177	8.687595	8.695927	8.704176	8.712343	8.720431	8.728439	8.736371	8.744226
		19 ^m	18 ^m	17 ^m	16 ^m	15 ^m	14 ^m	13 ^m	12 ^m	11 ^m

50"	51"	52"	53"	54"	55"	56"	57"	58"	59"
27 deg.	28 deg.				29 deg.				
752007	759715	767350	774916	782411	789839	797199	804494	811723	818889
752136	759842	767477	775041	782536	789962	797321	804615	811843	819008
752265	759970	767604	775167	782660	790085	797443	804736	811963	819127
752394	760098	767730	775292	782784	790208	797566	804857	812083	819246
752523	760226	767857	775417	782909	790332	797688	804978	812203	819365
752652	760353	767983	775543	783033	790455	797810	805099	812323	819484
752781	760481	768110	775668	783157	790578	797932	805220	812443	819602
752910	760609	768237	775794	783281	790701	798054	805341	812563	819721
753039	760737	768363	775919	783406	790824	798176	805461	812683	819840
753168	760864	768490	776044	783530	790947	798298	805582	812802	819959
753296	760992	768616	776170	783654	791070	798420	805703	812922	820078
753425	761120	768743	776295	783778	791193	798541	805824	813042	820196
753554	761247	768869	776420	783902	791316	798663	805945	813162	820315
753683	761375	768995	776545	784026	791439	798785	806066	813281	820434
753812	761503	769122	776671	784150	791562	798907	806186	813401	820552
753941	761630	769248	776796	784274	791685	799029	806307	813521	820671
754069	761758	769375	776921	784399	791808	799151	806428	813641	820790
754198	761885	769501	777046	784523	791931	799273	806549	813760	820908
754327	762013	769627	777172	784647	792054	799395	806669	813880	821027
754456	762140	769754	777297	784771	792177	799516	806790	813999	821145
754584	762268	769880	777422	784895	792300	799638	806911	814119	821264
754713	762395	770006	777547	785019	792423	799760	807031	814239	821382
754841	762523	770132	777672	785143	792545	799882	807152	814358	821501
754970	762650	770259	777797	785266	792668	800003	807273	814478	821619
755099	762777	770385	777922	785390	792791	800125	807393	814597	821738
755227	762905	770511	778047	785514	792914	800247	807514	814717	821856
755356	763032	770637	778172	785638	793037	800368	807635	814836	821975
755484	763159	770763	778297	785762	793159	800490	807755	814956	822093
755613	763287	770889	778422	785886	793282	800612	807876	815075	822212
755741	763414	771016	778547	786010	793405	800733	807996	815195	822330
755870	763541	771142	778672	786134	793527	800855	808117	815314	822449
755998	763669	771268	778797	786257	793650	800976	808237	815434	822567
756127	763796	771394	778922	786381	793773	801098	808358	815553	822685
756255	763923	771520	779047	786505	793895	801219	808478	815672	822804
756383	764050	771646	779172	786629	794018	801341	808598	815792	822922
756512	764177	771772	779296	786752	794140	801462	808719	815911	823040
756640	764305	771898	779421	786876	794263	801584	808839	816031	823159
756768	764432	772024	779546	787000	794386	801705	808960	816150	823277
756897	764559	772150	779671	787123	794508	801827	809080	816269	823395
757025	764686	772276	779796	787247	794631	801948	809200	816388	823513
757153	764813	772402	779920	787370	794753	802070	809321	816508	823632
757282	764940	772527	780045	787494	794876	802191	809441	816627	823750
757410	765067	772653	780170	787618	794998	802312	809561	816746	823868
757538	765194	772779	780294	787741	795121	802434	809682	816865	823986
757666	765321	772905	780419	787865	795243	802555	809802	816985	824104
757794	765448	773031	780544	787988	795365	802676	809922	817104	824222
757923	765575	773157	780668	788112	795488	802798	810042	817223	824341
758051	765702	773282	780793	788235	795610	802919	810162	817342	824459
758179	765829	773408	780918	788359	795733	803040	810283	817461	824577
758307	765956	773534	781042	788482	795855	803161	810403	817580	824695
758435	766083	773660	781167	788606	795977	803283	810523	817699	824813
758563	766209	773785	781291	788729	796099	803404	810643	817818	824931
758691	766336	773911	781416	788852	796222	803525	810763	817938	825049
758819	766463	774037	781540	788976	796344	803646	810883	818056	825167
758947	766590	774162	781665	789099	796466	803767	811003	818176	825285
759075	766717	774288	781789	789222	796588	803888	811123	818295	825403
759203	766844	774413	781914	789346	796711	804010	811243	818414	825521
759331	766970	774539	782038	789469	796833	804131	811363	818532	825639
759459	767097	774664	782163	789592	796955	804252	811483	818651	825757
759587	767224	774790	782287	789716	797077	804373	811603	818770	825875
759715	767350	774916	782411	789839	797199	804494	811723	818889	825992

		0 ^m	1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m	8 ^m
Lat.	Long.	30 deg				31 deg.				32 deg
		0'	15'	30'	45'	0'	15'	30'	45'	0'
0	0	8.825992	8.833034	8.840015	8.846936	8.853798	8.860602	8.867349	8.874040	8.880676
1	15	826110	833151	840130	847050	853912	860715	867461	874151	880786
2	30	826228	833268	840246	847165	854025	860828	867573	874262	880896
3	45	826346	833384	840362	847280	854139	860941	867685	874373	881006
4	0	8.826464	8.833501	8.840478	8.847395	8.854253	8.861053	8.867797	8.874484	8.881117
5	15	826582	833618	840594	847510	854367	861166	867909	874595	881227
6	30	826699	833735	840709	847624	854481	861279	868021	874706	881337
7	45	826817	833851	840825	847739	854594	861392	868133	874817	881447
8	0	8.826935	8.833968	8.840941	8.847854	8.854708	8.861505	8.868245	8.874925	8.881557
9	15	827053	834085	841056	847969	854822	861618	868356	875039	881667
10	30	827170	834202	841172	848083	854936	861730	868468	875150	881777
11	45	827288	834318	841289	848198	855049	861843	868580	875261	881887
12	0	8.827406	8.834435	8.841404	8.848313	8.855163	8.861956	8.868692	8.875372	8.881997
13	15	827523	834551	841319	848427	855277	862069	868804	875483	882107
14	30	827641	834668	841635	848542	855390	862181	868915	875594	882217
15	45	827759	834785	841750	848656	855504	862294	869027	875704	882327
16	0	8.827876	8.834901	8.841866	8.848771	8.855618	8.862407	8.869139	8.875815	8.882436
17	15	827994	835018	841981	848886	855731	862519	869251	875926	882546
18	30	828111	835134	842097	849000	855845	862632	869362	876037	882656
19	45	828229	835251	842213	849115	855959	862745	869474	876148	882766
20	0	8.828346	8.835367	8.842328	8.849229	8.856072	8.862857	8.869586	8.876258	8.882876
21	15	828464	835484	842444	849344	856186	862970	869697	876369	882986
22	30	828581	835600	842559	849458	856299	863082	869809	876480	883096
23	45	828699	835717	842675	849573	856413	863195	869921	876590	883205
24	0	8.828816	8.835833	8.842790	8.849687	8.856526	8.863308	8.870032	8.876701	8.883315
25	15	828934	835950	842905	849802	856640	863420	870144	876812	883425
26	30	829051	836066	843021	849916	856753	863533	870255	876923	883535
27	45	829169	836183	843136	850031	856867	863645	870367	877033	883644
28	0	8.829286	8.836299	8.843252	8.850145	8.856980	8.863758	8.870479	8.877144	8.883754
29	15	829403	836415	843367	850259	857093	863870	870590	877254	883864
30	30	829521	836532	843482	850374	857207	863983	870702	877365	883974
31	45	829638	836648	843598	850488	857320	864095	870813	877476	884083
32	0	8.829756	8.836764	8.843713	8.850603	8.857434	8.864207	8.870925	8.877586	8.884193
33	15	829873	836881	843828	850717	857547	864320	871036	877697	884303
34	30	829990	836997	843944	850831	857660	864432	871148	877807	884412
35	45	830107	837113	844059	850945	857774	864545	871259	877918	884522
36	0	8.830225	8.837230	8.844174	8.851060	8.857887	8.864657	8.871370	8.878028	8.884632
37	15	830342	837346	844289	851174	858000	864769	871482	878139	884741
38	30	830459	837462	844405	851288	858114	864882	871593	878249	884851
39	45	830576	837578	844520	851403	858227	864994	871705	878360	884960
40	0	8.830694	8.837694	8.844635	8.851517	8.858340	8.865106	8.871816	8.878470	8.885070
41	15	830811	837810	844750	851631	858453	865219	871927	878581	885179
42	30	830928	837927	844865	851745	858567	865331	872039	878691	885289
43	45	831045	838043	844981	851859	858680	865443	872150	878802	885398
44	0	8.831162	8.838159	8.845096	8.851973	8.858793	8.865555	8.872261	8.878912	8.885508
45	15	831279	838275	845211	852088	858906	865668	872373	879022	885617
46	30	831396	838391	845326	852202	859019	865780	872484	879133	885727
47	45	831513	838507	845441	852316	859132	865892	872595	879243	885836
48	0	8.831630	8.838623	8.845556	8.852430	8.859246	8.866004	8.872706	8.879353	8.885946
49	15	831748	838739	845571	852544	859359	866116	872818	879464	886055
50	30	831865	838855	845786	852658	859472	866229	872929	879574	886164
51	45	831982	838971	845901	852772	859585	866341	873040	879684	886274
52	0	8.832099	8.839087	8.846016	8.852886	8.859698	8.866453	8.873151	8.879795	8.886383
53	15	832216	839203	846131	853000	859811	866565	873262	879905	886493
54	30	832332	839319	846246	853114	859924	866677	873374	880015	886602
55	45	832449	839435	846361	853228	860037	866789	873485	880125	886711
56	0	8.832566	8.839551	8.846476	8.853342	8.860150	8.866901	8.873596	8.880235	8.886821
57	15	832683	839667	846591	853456	860263	867013	873707	880346	886930
58	30	832800	839783	846706	853570	860376	867125	873818	880456	887039
59	45	832917	839899	846821	853684	860489	867237	873929	880566	887148
60	0	8.833034	8.840015	8.846936	8.853798	8.860602	8.867349	8.874040	8.880676	8.887258
		59 ^m	58 ^m	57 ^m	56 ^m	55 ^m	54 ^m	53 ^m	52 ^m	51 ^m

2 Hours.

Log. Haversines. (1)

2 Hours.

	10 ^m	11 ^m	12 ^m	13 ^m	14 ^m	15 ^m	16 ^m	17 ^m	18 ^m	19 ^m	
	32 deg.		33 deg.				34 deg.				
0 ^h	8.893785	8.900261	8.906684	8.913055	8.919377	8.925648	8.931871	8.938045	8.944171	8.950251	60
1 ^h	8.893894	9.00368	9.00790	9.01361	9.019482	9.025752	9.031974	9.038147	9.044273	9.050351	59
2 ^h	8.894002	9.00475	9.00897	9.01467	9.020547	9.026817	9.032989	9.039161	9.045287	9.051365	58
3 ^h	8.894110	9.00583	9.01005	9.01575	9.021627	9.027897	9.034069	9.040241	9.046367	9.052445	57
4 ^h	8.894219	8.90690	8.91311	8.91932	8.92553	8.93174	8.93795	8.94416	8.95037	8.95658	56
5 ^h	8.894327	9.00798	9.01419	9.02040	9.02661	9.03282	9.03903	9.04524	9.05145	9.05766	55
6 ^h	8.894435	9.00905	9.01526	9.02147	9.02768	9.03389	9.04010	9.04631	9.05252	9.05873	54
7 ^h	8.894544	9.01013	9.01634	9.02255	9.02876	9.03497	9.04118	9.04739	9.05360	9.05981	53
8 ^h	8.894652	8.91120	8.91741	8.92362	8.92983	8.93604	8.94225	8.94846	8.95467	8.96088	52
9 ^h	8.894760	9.01227	9.01848	9.02469	9.03090	9.03711	9.04332	9.04953	9.05574	9.06195	51
10 ^h	8.894868	9.01335	9.01956	9.02577	9.03198	9.03819	9.04440	9.05061	9.05682	9.06303	50
11 ^h	8.894976	9.01442	9.02063	9.02684	9.03305	9.03926	9.04547	9.05168	9.05789	9.06410	49
12 ^h	8.895085	8.91549	8.92170	8.92791	8.93412	8.94033	8.94654	8.95275	8.95896	8.96517	48
13 ^h	8.895193	9.01657	9.02278	9.02899	9.03520	9.04141	9.04762	9.05383	9.05904	9.06525	47
14 ^h	8.895301	9.01764	9.02385	9.03006	9.03627	9.04248	9.04869	9.05490	9.06111	9.06732	46
15 ^h	8.895409	9.01871	9.02492	9.03113	9.03734	9.04355	9.04976	9.05597	9.06218	9.06839	45
16 ^h	8.895517	8.91978	8.92599	8.93220	8.93841	8.94462	8.95083	8.95704	8.96325	8.96946	44
17 ^h	8.895625	9.02086	9.02707	9.03328	9.03949	9.04570	9.05191	9.05812	9.06433	9.07054	43
18 ^h	8.895734	9.02193	9.02814	9.03435	9.04056	9.04677	9.05298	9.05919	9.06540	9.07161	42
19 ^h	8.895842	9.02300	9.02921	9.03542	9.04163	9.04784	9.05405	9.06026	9.06647	9.07268	41
20 ^h	8.895950	8.92407	8.93028	8.93649	8.94270	8.94891	8.95512	8.96133	8.96754	8.97375	40
21 ^h	8.896058	9.02514	9.03135	9.03756	9.04377	9.04998	9.05619	9.06240	9.06861	9.07482	39
22 ^h	8.896166	9.02622	9.03243	9.03864	9.04485	9.05106	9.05727	9.06348	9.06969	9.07590	38
23 ^h	8.896274	9.02729	9.03350	9.03971	9.04592	9.05213	9.05834	9.06455	9.07076	9.07697	37
24 ^h	8.896382	8.92836	8.93457	8.94078	8.94699	8.95320	8.95941	8.96562	8.97183	8.97804	36
25 ^h	8.896490	9.02943	9.03564	9.04185	9.04806	9.05427	9.06048	9.06669	9.07290	9.07911	35
26 ^h	8.896598	9.03050	9.03671	9.04292	9.04913	9.05534	9.06155	9.06776	9.07397	9.08018	34
27 ^h	8.896706	9.03157	9.03778	9.04399	9.05020	9.05641	9.06262	9.06883	9.07504	9.08125	33
28 ^h	8.896814	8.93264	8.93885	8.94506	8.95127	8.95748	8.96369	8.96990	8.97611	8.98232	32
29 ^h	8.896922	9.03371	9.03992	9.04613	9.05234	9.05855	9.06476	9.07097	9.07718	9.08339	31
30 ^h	8.897030	9.03479	9.04099	9.04720	9.05341	9.05962	9.06583	9.07204	9.07825	9.08446	30
31 ^h	8.897137	9.03586	9.04207	9.04828	9.05449	9.06070	9.06691	9.07312	9.07933	9.08554	29
32 ^h	8.897245	8.93693	8.94314	8.94935	8.95556	8.96177	8.96798	8.97419	8.98040	8.98661	28
33 ^h	8.897353	9.03800	9.04421	9.05042	9.05663	9.06284	9.06905	9.07526	9.08147	9.08768	27
34 ^h	8.897461	9.03907	9.04528	9.05149	9.05770	9.06391	9.07012	9.07633	9.08254	9.08875	26
35 ^h	8.897569	9.04014	9.04635	9.05256	9.05877	9.06498	9.07119	9.07740	9.08361	9.08982	25
36 ^h	8.897677	8.94121	8.94742	8.95363	8.95984	8.96605	8.97226	8.97847	8.98468	8.99089	24
37 ^h	8.897785	9.04228	9.04849	9.05470	9.06091	9.06712	9.07333	9.07954	9.08575	9.09196	23
38 ^h	8.897892	9.04334	9.04955	9.05576	9.06197	9.06818	9.07439	9.08060	9.08681	9.09302	22
39 ^h	8.898000	9.04441	9.05062	9.05683	9.06304	9.06925	9.07546	9.08167	9.08788	9.09409	21
40 ^h	8.898108	8.94548	8.95169	8.95790	8.96411	8.97032	8.97653	8.98274	8.98895	8.99516	20
41 ^h	8.898216	9.04655	9.05276	9.05897	9.06518	9.07139	9.07760	9.08381	9.08902	9.09523	19
42 ^h	8.898324	9.04762	9.05383	9.06004	9.06625	9.07246	9.07867	9.08488	9.09109	9.09730	18
43 ^h	8.898431	9.04869	9.05490	9.06111	9.06732	9.07353	9.07974	9.08595	9.09216	9.09837	17
44 ^h	8.898539	8.94976	8.95597	8.96218	8.96839	8.97460	8.98081	8.98702	8.99323	8.99944	16
45 ^h	8.898647	9.05083	9.05704	9.06325	9.06946	9.07567	9.08188	9.08809	9.09430	9.09951	15
46 ^h	8.898754	9.05190	9.05811	9.06432	9.07053	9.07674	9.08295	9.08916	9.09537	9.10158	14
47 ^h	8.898862	9.05296	9.05917	9.06538	9.07159	9.07780	9.08401	9.09022	9.09643	9.10264	13
48 ^h	8.898970	8.95403	8.96024	8.96645	8.97266	8.97887	8.98508	8.99129	8.99750	9.00371	12
49 ^h	8.899077	9.05510	9.06131	9.06752	9.07373	9.07994	9.08615	9.09236	9.09857	9.10478	11
50 ^h	8.899185	9.05617	9.06238	9.06859	9.07480	9.08101	9.08722	9.09343	9.09964	9.10585	10
51 ^h	8.899293	9.05723	9.06344	9.06965	9.07586	9.08207	9.08828	9.09449	9.10070	9.10691	9
52 ^h	8.899400	8.95830	8.96451	8.97072	8.97693	8.98314	8.98935	8.99556	9.00177	9.00798	8
53 ^h	8.899508	9.05937	9.06558	9.07179	9.07800	9.08421	9.09042	9.09663	9.10284	9.10905	7
54 ^h	8.899615	9.06044	9.06665	9.07286	9.07907	9.08528	9.09149	9.09770	9.10391	9.11012	6
55 ^h	8.899723	9.06150	9.06771	9.07392	9.08013	9.08634	9.09255	9.09876	9.10497	9.11118	5
56 ^h	8.899831	8.96257	8.96878	8.97499	8.98120	8.98741	8.99362	8.99983	9.00604	9.01225	4
57 ^h	8.899938	9.06364	9.06985	9.07606	9.08227	9.08848	9.09469	9.10090	9.10711	9.11332	3
58 ^h	8.900046	9.06470	9.07091	9.07712	9.08333	9.08954	9.09575	9.10196	9.10817	9.11438	2
59 ^h	8.900153	9.06577	9.07198	9.07819	9.08440	9.09061	9.09682	9.10303	9.10924	9.11545	1
60 ^h	8.900261	8.96684	8.97305	8.97926	8.98547	8.99168	8.99789	9.00410	9.01031	9.01652	0

21 Hours.

210

21 Hours.

2 Hours.

Log. Haversines. (1)

2 Hours.

	20"	21"	22"	23"	24"	25"	26"	27"	28"	29"	
35 deg.											
0	8.956284	8.962271	8.968213	8.974111	8.979965	8.985775	8.991543	8.997269	9.002953	9.008596	9.014244
1	15 956384	962370	968312	974209	980062	985872	991639	997364	003047	008690	014332
2	30 956484	962470	968410	974307	980159	985968	991735	997459	003142	008783	014425
3	45 956584	962569	968509	974405	980256	986065	991830	997554	003236	008877	014519
4	0 1' 956684	8.962668	8.968608	8.974502	8.980353	8.986161	8.991926	8.997649	9.003330	9.008971	9.014612
5	15 956784	962768	968706	974600	980451	986258	992022	997744	003425	009064	014708
6	30 956884	962867	968805	974698	980548	986354	992118	997839	003519	009158	014799
7	45 956984	962966	968903	974796	980645	986450	992213	997934	003613	009252	014890
8	0 8.957085	8.963066	8.969002	8.974894	8.980742	8.986547	8.992309	8.998029	9.003708	9.009345	9.014982
9	15 957185	963165	969101	974992	980839	986643	992405	998124	003802	009380	014982
10	30 957285	963264	969199	975090	980936	986740	992500	998219	003896	009474	015073
11	45 957385	963364	969298	975187	981033	986836	992596	998314	003990	009566	015164
12	0 8.957485	8.963463	8.969396	8.975285	8.981130	8.986932	8.992692	8.998409	9.004085	9.009720	9.015355
13	15 957585	963562	969495	975383	981227	987029	992787	998504	004179	009813	015446
14	30 957685	963661	969593	975481	981324	987125	992883	998599	004273	009907	015537
15	45 957785	963761	969692	975578	981421	987221	992978	998694	004367	010000	015628
16	0 8.957885	8.963860	8.969790	8.975676	8.981518	8.987318	8.993074	8.998789	9.004462	9.010094	9.015729
17	15 957985	963959	969889	975774	981615	987414	993170	998883	004556	010187	015819
18	30 958085	964058	969987	975872	981712	987510	993265	998978	004650	010281	015910
19	45 958184	964157	970086	975969	981809	987606	993361	999073	004744	010374	016001
20	0 8.958284	8.964257	8.970184	8.976067	8.981906	8.987703	8.993456	8.999168	9.004838	9.010468	9.016098
21	15 958384	964356	970282	976165	982003	987799	993552	999263	004933	010561	016189
22	30 958484	964455	970381	976262	982100	987895	993647	999358	005027	010655	016280
23	45 958584	964554	970479	976360	982197	987991	993743	999453	005121	010748	016371
24	0 8.958684	8.964653	8.970578	8.976458	8.982294	8.988088	8.993838	8.999547	9.005215	9.010842	9.016469
25	15 958784	964752	970676	976555	982391	988184	993934	999642	005309	010933	016560
26	30 958884	964851	970774	976653	982488	988280	994029	999737	005403	011024	016651
27	45 958983	964950	970873	976750	982585	988376	994125	999832	005497	011123	016742
28	0 8.959083	8.965050	8.970971	8.976848	8.982682	8.988472	8.994220	8.999927	9.005591	9.011215	9.016839
29	15 959183	965149	971069	976946	982778	988568	994316	9.000021	005685	011309	016930
30	30 959283	965248	971168	977043	982875	988665	994411	000116	005779	011402	017021
31	45 959383	965347	971266	977141	982972	988761	994507	000211	005873	011496	017112
32	0 8.959482	8.965446	8.971364	8.977238	8.983069	8.988857	8.994602	9.000305	9.005968	9.011589	9.017210
33	15 959582	965545	971462	977336	983166	988953	994697	000400	006062	011682	017303
34	30 959682	965644	971561	977433	983263	989049	994793	000495	006156	011776	017394
35	45 959782	965743	971659	977531	983359	989145	994888	000589	006250	011869	017485
36	0 8.959881	8.965842	8.971757	8.977628	8.983456	8.989241	8.994984	9.000684	9.006344	9.011962	9.017580
37	15 959981	965941	971855	977726	983553	989337	995079	000779	006438	012053	017571
38	30 960081	966040	971953	977823	983650	989433	995174	000874	006532	012149	017662
39	45 960180	966138	972052	977921	983746	989529	995270	000968	006625	012242	017753
40	0 8.960280	8.966237	8.972150	8.978018	8.983843	8.989625	8.995365	9.001063	9.006719	9.012335	9.017950
41	15 960380	966336	972248	978116	983940	989721	995460	001157	006813	012429	018061
42	30 960479	966435	972346	978213	984037	989817	995555	001252	006907	012522	018152
43	45 960579	966534	972444	978310	984133	989913	995651	001346	007001	012615	018243
44	0 8.960679	8.966633	8.972542	8.978408	8.984230	8.990009	8.995746	9.001441	9.007095	9.012708	9.018321
45	15 960778	966732	972641	978505	984327	990105	995841	001536	007189	012802	018412
46	30 960878	966831	972739	978603	984423	990201	995937	001630	007283	012895	018503
47	45 960977	966929	972837	978700	984520	990297	996032	001725	007377	012988	018594
48	0 8.961077	8.967028	8.972935	8.978797	8.984617	8.990393	8.996127	9.001819	9.007471	9.013081	9.018691
49	15 961177	967127	973033	978895	984713	990489	996222	001914	007564	013174	018782
50	30 961276	967226	973131	978992	984810	990585	996317	002008	007658	013267	018873
51	45 961376	967325	973229	979089	984906	990681	996413	002103	007752	013361	018964
52	0 8.961475	8.967423	8.973327	8.979187	8.985003	8.990777	8.996508	9.002197	9.007846	9.013454	9.019062
53	15 961575	967522	973425	979284	985100	990872	996603	002292	007940	013547	019153
54	30 961674	967621	973523	979381	985196	990968	996698	002386	008033	013640	019244
55	45 961774	967720	973621	979478	985293	991064	996793	002481	008127	013733	019335
56	0 8.961873	8.967818	8.973719	8.979576	8.985389	8.991160	8.996888	9.002575	9.008221	9.013826	9.019431
57	15 961973	967917	973817	979673	985486	991256	996983	002670	008315	013919	019522
58	30 962072	968016	973915	979770	985582	991352	997079	002764	008408	014012	019613
59	45 962171	968114	974013	979867	985679	991447	997174	002858	008502	014103	019704
60	0 8.962271	8.968213	8.974111	8.979965	8.985775	8.991543	8.997269	9.002953	9.008596	9.014244	9.019896
	39"	38"	37"	36"	35"	34"	33"	32"	31"	30"	

21 Hours.

21 Hours.

2 Hours.

Log. Haversines. (1)

2 Hours.

	30"	31"	32"	33"	34"	35"	36"	37"	38"	39"	
	37 deg.					38 deg.					
0	0.014198	0.019761	0.025284	0.030768	0.036213	0.041621	0.046991	0.052323	0.057619	0.062879	60
1	0.014291	0.019853	0.025375	0.030859	0.036304	0.041710	0.047080	0.052412	0.057707	0.062967	59
2	0.014381	0.019946	0.025467	0.030950	0.036394	0.041800	0.047169	0.052500	0.057795	0.063054	58
3	0.014477	0.020038	0.025559	0.031041	0.036484	0.041890	0.047258	0.052589	0.057883	0.063141	57
4	0.014570	0.020130	0.025651	0.031132	0.036575	0.041980	0.047347	0.052677	0.057971	0.063229	56
5	0.014663	0.020223	0.025742	0.031223	0.036665	0.042070	0.047436	0.052766	0.058059	0.063316	55
6	0.014756	0.020315	0.025834	0.031314	0.036756	0.042159	0.047525	0.052855	0.058147	0.063403	54
7	0.014849	0.020407	0.025926	0.031405	0.036846	0.042249	0.047615	0.052943	0.058235	0.063491	53
8	0.014942	0.020500	0.026017	0.031496	0.036936	0.042339	0.047704	0.053032	0.058323	0.063578	52
9	0.015035	0.020592	0.026109	0.031587	0.037027	0.042429	0.047793	0.053120	0.058411	0.063665	51
10	0.015128	0.020684	0.026201	0.031678	0.037117	0.042518	0.047882	0.053208	0.058500	0.063752	50
11	0.015221	0.020776	0.026292	0.031769	0.037207	0.042608	0.047971	0.053297	0.058586	0.063840	49
12	0.015314	0.020869	0.026384	0.031860	0.037298	0.042698	0.048060	0.053385	0.058674	0.063927	48
13	0.015407	0.020961	0.026475	0.031951	0.037388	0.042787	0.048149	0.053474	0.058762	0.064014	47
14	0.015500	0.021053	0.026567	0.032042	0.037478	0.042877	0.048238	0.053562	0.058850	0.064101	46
15	0.015593	0.021145	0.026658	0.032133	0.037569	0.042967	0.048327	0.053651	0.058938	0.064189	45
16	0.015686	0.021237	0.026750	0.032224	0.037659	0.043056	0.048416	0.053739	0.059026	0.064276	44
17	0.015778	0.021330	0.026841	0.032315	0.037749	0.043146	0.048505	0.053827	0.059113	0.064363	43
18	0.015871	0.021422	0.026933	0.032405	0.037839	0.043236	0.048594	0.053916	0.059201	0.064450	42
19	0.015964	0.021514	0.027025	0.032496	0.037930	0.043325	0.048683	0.054004	0.059289	0.064537	41
20	0.016057	0.021606	0.027116	0.032587	0.038020	0.043415	0.048772	0.054093	0.059377	0.064625	40
21	0.016150	0.021698	0.027208	0.032678	0.038110	0.043504	0.048861	0.054181	0.059464	0.064712	39
22	0.016243	0.021791	0.027299	0.032769	0.038200	0.043594	0.048950	0.054269	0.059552	0.064799	38
23	0.016335	0.021883	0.027391	0.032860	0.038291	0.043683	0.049039	0.054358	0.059640	0.064886	37
24	0.016428	0.021975	0.027482	0.032951	0.038381	0.043773	0.049128	0.054446	0.059728	0.064973	36
25	0.016521	0.022067	0.027573	0.033041	0.038471	0.043863	0.049217	0.054534	0.059815	0.065060	35
26	0.016614	0.022159	0.027665	0.033132	0.038561	0.043952	0.049306	0.054623	0.059903	0.065147	34
27	0.016706	0.022251	0.027756	0.033223	0.038651	0.044042	0.049395	0.054711	0.059991	0.065234	33
28	0.016799	0.022343	0.027848	0.033314	0.038741	0.044131	0.049484	0.054799	0.060078	0.065322	32
29	0.016892	0.022435	0.027939	0.033404	0.038832	0.044221	0.049573	0.054888	0.060166	0.065409	31
30	0.016985	0.022527	0.028031	0.033495	0.038922	0.044310	0.049661	0.054976	0.060254	0.065496	30
31	0.017077	0.022619	0.028122	0.033586	0.039012	0.044400	0.049750	0.055064	0.060341	0.065583	29
32	0.017170	0.022711	0.028213	0.033677	0.039102	0.044489	0.049839	0.055152	0.060429	0.065670	28
33	0.017263	0.022803	0.028305	0.033767	0.039192	0.044579	0.049928	0.055241	0.060517	0.065757	27
34	0.017355	0.022895	0.028396	0.033858	0.039282	0.044668	0.050017	0.055329	0.060604	0.065844	26
35	0.017448	0.022987	0.028487	0.033949	0.039372	0.044758	0.050106	0.055417	0.060692	0.065931	25
36	0.017541	0.023079	0.028579	0.034040	0.039462	0.044847	0.050195	0.055505	0.060780	0.066018	24
37	0.017633	0.023171	0.028670	0.034130	0.039552	0.044936	0.050283	0.055593	0.060867	0.066105	23
38	0.017726	0.023263	0.028762	0.034221	0.039642	0.045026	0.050372	0.055682	0.060955	0.066192	22
39	0.017818	0.023355	0.028853	0.034312	0.039732	0.045115	0.050461	0.055770	0.061042	0.066279	21
40	0.017911	0.023447	0.028944	0.034402	0.039822	0.045205	0.050550	0.055858	0.061130	0.066366	20
41	0.018004	0.023539	0.029035	0.034493	0.039912	0.045294	0.050638	0.055946	0.061217	0.066453	19
42	0.018096	0.023631	0.029127	0.034584	0.040002	0.045383	0.050727	0.056034	0.061305	0.066540	18
43	0.018189	0.023723	0.029218	0.034674	0.040092	0.045473	0.050816	0.056122	0.061393	0.066627	17
44	0.018281	0.023815	0.029309	0.034765	0.040182	0.045562	0.050905	0.056211	0.061480	0.066714	16
45	0.018374	0.023907	0.029400	0.034855	0.040272	0.045652	0.050993	0.056299	0.061568	0.066801	15
46	0.018467	0.023999	0.029492	0.034946	0.040362	0.045741	0.051082	0.056387	0.061655	0.066888	14
47	0.018559	0.024090	0.029583	0.035037	0.040452	0.045830	0.051171	0.056475	0.061743	0.066974	13
48	0.018652	0.024182	0.029674	0.035127	0.040542	0.045920	0.051260	0.056563	0.061830	0.067061	12
49	0.018744	0.024274	0.029765	0.035218	0.040632	0.046009	0.051348	0.056651	0.061918	0.067148	11
50	0.018837	0.024366	0.029856	0.035308	0.040722	0.046098	0.051437	0.056739	0.062005	0.067235	10
51	0.018929	0.024458	0.029948	0.035399	0.040812	0.046187	0.051526	0.056827	0.062093	0.067322	9
52	0.019021	0.024550	0.030039	0.035489	0.040902	0.046277	0.051614	0.056915	0.062180	0.067409	8
53	0.019114	0.024641	0.030130	0.035580	0.040992	0.046366	0.051703	0.057003	0.062267	0.067496	7
54	0.019206	0.024733	0.030221	0.035670	0.041082	0.046455	0.051792	0.057091	0.062355	0.067583	6
55	0.019299	0.024825	0.030312	0.035761	0.041171	0.046544	0.051880	0.057179	0.062442	0.067669	5
56	0.019391	0.024917	0.030403	0.035851	0.041261	0.046634	0.051969	0.057267	0.062530	0.067756	4
57	0.019484	0.025009	0.030494	0.035942	0.041351	0.046723	0.052057	0.057355	0.062617	0.067843	3
58	0.019576	0.025100	0.030586	0.036032	0.041441	0.046812	0.052146	0.057443	0.062704	0.067930	2
59	0.019668	0.025192	0.030677	0.036123	0.041531	0.046901	0.052235	0.057531	0.062792	0.068017	1
60	0.019761	0.025284	0.030768	0.036213	0.041621	0.046991	0.052323	0.057619	0.062879	0.068103	0
29"	28"	27"	26"	25"	24"	23"	22"	21"	20"		

1 Hour.

2 Hours.

Log. Havermeia (S)

2 Hours.

		40 ^m	41 ^m	42 ^m	43 ^m	44 ^m	45 ^m	46 ^m	47 ^m	48 ^m	49 ^m		
		40 deg.				41 deg.				42 deg.			
SEC.	ARC.	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'	SEC.	ARC.
0	0	0.068103	0.073292	0.078446	0.083565	0.088651	0.093702	0.098720	0.103706	0.108658	0.113579	60	0
1	15	0.068190	0.073378	0.078532	0.083650	0.088735	0.093786	0.098804	0.103788	0.108741	0.113661	59	15
2	30	0.068277	0.073465	0.078617	0.083735	0.088820	0.093870	0.098887	0.103871	0.108823	0.113742	58	30
3	45	0.068364	0.073551	0.078703	0.083820	0.088904	0.093954	0.098970	0.103954	0.108905	0.113824	57	45
4	0	0.068450	0.073637	0.078788	0.083905	0.088988	0.094038	0.099054	0.104037	0.108987	0.113906	56	0
5	15	0.068537	0.073723	0.078874	0.083990	0.089073	0.094122	0.099137	0.104119	0.109070	0.113987	55	15
6	30	0.068624	0.073809	0.078959	0.084075	0.089157	0.094203	0.099220	0.104202	0.109152	0.114069	54	30
7	45	0.068711	0.073895	0.079045	0.084160	0.089242	0.094289	0.099304	0.104285	0.109234	0.114151	53	45
8	0	0.068797	0.073981	0.079131	0.084245	0.089326	0.094373	0.099387	0.104368	0.109316	0.114233	52	0
9	15	0.068884	0.074067	0.079216	0.084330	0.089410	0.094457	0.099470	0.104450	0.109398	0.114314	51	15
10	30	0.068971	0.074154	0.079302	0.084415	0.089495	0.094541	0.099553	0.104533	0.109481	0.114396	50	30
11	45	0.069057	0.074240	0.079387	0.084500	0.089579	0.094625	0.099637	0.104616	0.109563	0.114477	49	45
12	0	0.069144	0.074326	0.079473	0.084585	0.089664	0.094708	0.099720	0.104699	0.109645	0.114559	48	0
13	15	0.069231	0.074412	0.079558	0.084670	0.089748	0.094792	0.099803	0.104781	0.109727	0.114641	47	15
14	30	0.069317	0.074498	0.079644	0.084755	0.089832	0.094876	0.099886	0.104864	0.109809	0.114722	46	30
15	45	0.069404	0.074584	0.079729	0.084840	0.089917	0.094960	0.099970	0.104947	0.109891	0.114804	45	45
16	0	0.069490	0.074670	0.079815	0.084925	0.090001	0.095044	0.100053	0.105030	0.109974	0.114886	44	0
17	15	0.069577	0.074756	0.079900	0.085010	0.090085	0.095127	0.100136	0.105112	0.110056	0.114967	43	15
18	30	0.069664	0.074842	0.079985	0.085094	0.090170	0.095211	0.100219	0.105193	0.110138	0.115049	42	30
19	45	0.069750	0.074928	0.080071	0.085179	0.090254	0.095295	0.100302	0.105277	0.110220	0.115130	41	45
20	0	0.069837	0.075014	0.080156	0.085264	0.090338	0.095379	0.100386	0.105360	0.110302	0.115212	40	0
21	15	0.069923	0.075100	0.080242	0.085349	0.090422	0.095462	0.100469	0.105443	0.110384	0.115293	39	15
22	30	0.070010	0.075186	0.080327	0.085434	0.090507	0.095546	0.100552	0.105525	0.110466	0.115375	38	30
23	45	0.070097	0.075272	0.080412	0.085519	0.090591	0.095630	0.100635	0.105608	0.110548	0.115457	37	45
24	0	0.070183	0.075358	0.080498	0.085604	0.090675	0.095713	0.100718	0.105690	0.110630	0.115538	36	0
25	15	0.070270	0.075444	0.080583	0.085688	0.090759	0.095797	0.100801	0.105773	0.110712	0.115620	35	15
26	30	0.070356	0.075530	0.080669	0.085773	0.090844	0.095881	0.100885	0.105856	0.110794	0.115701	34	30
27	45	0.070443	0.075616	0.080754	0.085858	0.090928	0.095964	0.100968	0.105938	0.110876	0.115783	33	45
28	0	0.070529	0.075702	0.080839	0.085943	0.091012	0.096048	0.101051	0.106021	0.110959	0.115864	32	0
29	15	0.070616	0.075787	0.080925	0.086027	0.091096	0.096132	0.101134	0.106104	0.111041	0.115946	31	15
30	30	0.070702	0.075873	0.081010	0.086112	0.091181	0.096215	0.101217	0.106186	0.111123	0.116027	30	30
31	45	0.070789	0.075959	0.081095	0.086197	0.091265	0.096299	0.101300	0.106268	0.111205	0.116109	29	45
32	0	0.070875	0.076045	0.081181	0.086282	0.091349	0.096383	0.101383	0.106351	0.111287	0.116190	28	0
33	15	0.070962	0.076131	0.081266	0.086366	0.091433	0.096466	0.101466	0.106434	0.111369	0.116272	27	15
34	30	0.071048	0.076217	0.081351	0.086451	0.091517	0.096550	0.101549	0.106516	0.111451	0.116353	26	30
35	45	0.071134	0.076303	0.081436	0.086536	0.091601	0.096633	0.101632	0.106599	0.111532	0.116434	25	45
36	0	0.071221	0.076389	0.081522	0.086621	0.091686	0.096717	0.101715	0.106681	0.111614	0.116516	24	0
37	15	0.071307	0.076474	0.081607	0.086705	0.091770	0.096801	0.101798	0.106764	0.111696	0.116597	23	15
38	30	0.071394	0.076560	0.081692	0.086790	0.091854	0.096884	0.101881	0.106846	0.111778	0.116679	22	30
39	45	0.071480	0.076646	0.081777	0.086875	0.091938	0.096968	0.101964	0.106928	0.111860	0.116760	21	45
40	0	0.071566	0.076732	0.081863	0.086959	0.092022	0.097051	0.102047	0.107011	0.111942	0.116841	20	0
41	15	0.071653	0.076818	0.081948	0.087044	0.092106	0.097135	0.102130	0.107093	0.112024	0.116923	19	15
42	30	0.071739	0.076903	0.082033	0.087129	0.092190	0.097218	0.102213	0.107176	0.112106	0.117004	18	30
43	45	0.071826	0.076989	0.082118	0.087213	0.092274	0.097302	0.102296	0.107258	0.112188	0.117086	17	45
44	0	0.071912	0.077075	0.082204	0.087298	0.092358	0.097385	0.102379	0.107341	0.112270	0.117167	16	0
45	15	0.071998	0.077161	0.082289	0.087382	0.092442	0.097469	0.102462	0.107423	0.112352	0.117248	15	15
46	30	0.072085	0.077247	0.082374	0.087467	0.092526	0.097552	0.102545	0.107506	0.112434	0.117330	14	30
47	45	0.072171	0.077332	0.082459	0.087552	0.092610	0.097636	0.102628	0.107588	0.112515	0.117411	13	45
48	0	0.072257	0.077418	0.082544	0.087636	0.092694	0.097719	0.102711	0.107670	0.112597	0.117492	12	0
49	15	0.072343	0.077504	0.082629	0.087721	0.092779	0.097803	0.102794	0.107753	0.112679	0.117574	11	15
50	30	0.072430	0.077589	0.082715	0.087805	0.092863	0.097886	0.102877	0.107835	0.112761	0.117655	10	30
51	45	0.072516	0.077675	0.082800	0.087890	0.092947	0.097970	0.102960	0.107917	0.112843	0.117736	9	45
52	0	0.072602	0.077761	0.082885	0.087975	0.093031	0.098053	0.103043	0.108000	0.112925	0.117818	8	0
53	15	0.072689	0.077846	0.082970	0.088059	0.093114	0.098137	0.103126	0.108082	0.113006	0.117899	7	15
54	30	0.072775	0.077932	0.083055	0.088144	0.093198	0.098220	0.103209	0.108165	0.113088	0.117980	6	30
55	45	0.072861	0.078018	0.083140	0.088228	0.093282	0.098303	0.103291	0.108247	0.113170	0.118061	5	45
56	0	0.072947	0.078103	0.083225	0.088313	0.093366	0.098387	0.103374	0.108329	0.113252	0.118143	4	0
57	15	0.073033	0.078189	0.083310	0.088397	0.093450	0.098470	0.103457	0.108411	0.113334	0.118224	3	15
58	30	0.073120	0.078275	0.083395	0.088482	0.093534	0.098554	0.103540	0.108494	0.113415	0.118305	2	30
59	45	0.073206	0.078360	0.083480	0.088566	0.093618	0.098637	0.103623	0.108576	0.113497	0.118386	1	45
60	0	0.073292	0.078446	0.083565	0.088651	0.093702	0.098720	0.103706	0.108658	0.113579	0.118468	0	0
		19 ^m	18 ^m	17 ^m	16 ^m	15 ^m	14 ^m	13 ^m	12 ^m	11 ^m	10 ^m		

21 Hours.

21 Hours.

2 НОЧЬ.

Log. Haversines. (f)

2 НОЧЬ.

	50 ^m	51 ^m	52 ^m	53 ^m	54 ^m	55 ^m	56 ^m	57 ^m	58 ^m	59 ^m	
	42 deg.					43 deg.					
	42 ⁰⁰	42 ⁰¹	42 ⁰²	42 ⁰³	42 ⁰⁴	43 ⁰⁰	43 ⁰¹	43 ⁰²	43 ⁰³	43 ⁰⁴	
0	9.118468	9.123325	9.128151	9.132946	9.137711	9.142446	9.147151	9.151826	9.156473	9.161090	60
1	118549	123405	128231	133026	137790	142524	147229	151904	156550	161167	59
2	118630	123486	128311	133106	137869	142603	147307	151982	156627	161244	58
3	118711	123567	128391	133185	137948	142682	147385	152059	156704	161320	57
4	118792	123647	128472	133265	138028	142760	147463	152137	156781	161397	56
5	118873	123728	128552	133344	138107	142839	147542	152215	156859	161474	55
6	118955	123809	128632	133424	138186	142918	147620	152292	156936	161550	54
7	119036	123889	128712	133504	138265	142996	147698	152370	157013	161627	53
8	119117	123970	128792	133583	138344	143075	147776	152448	157090	161704	52
9	119198	124051	128872	133663	138423	143153	147854	152525	157167	161780	51
10	119279	124131	128952	133742	138502	143232	147932	152603	157244	161857	50
11	119360	124212	129032	133822	138581	143311	148010	152680	157321	161934	49
12	119441	124292	129112	133902	138660	143389	148088	152758	157399	162010	48
13	119523	124373	129192	133981	138739	143468	148166	152836	157476	162087	47
14	119604	124454	129273	134061	138819	143546	148244	152913	157553	162164	46
15	119685	124534	129353	134140	138898	143625	148322	152991	157630	162240	45
16	119766	124615	129433	134220	138977	143703	148401	153068	157707	162317	44
17	119847	124695	129513	134299	139056	143782	148479	153146	157784	162393	43
18	119928	124776	129593	134379	139135	143860	148557	153223	157861	162470	42
19	120009	124856	129673	134458	139214	143939	148635	153301	157938	162546	41
20	120090	124937	129753	134538	139293	144017	148713	153378	158015	162623	40
21	120171	125017	129833	134617	139372	144096	148791	153456	158092	162700	39
22	120252	125098	129913	134697	139451	144174	148869	153533	158169	162776	38
23	120333	125178	129993	134776	139530	144253	148947	153611	158246	162853	37
24	120414	125259	130073	134856	139609	144331	149025	153688	158323	162929	36
25	120495	125339	130153	134935	139687	144410	149103	153766	158400	163006	35
26	120576	125420	130233	135015	139766	144488	149180	153843	158477	163082	34
27	120657	125500	130312	135094	139845	144567	149258	153921	158554	163159	33
28	120738	125581	130392	135174	139924	144645	149336	153998	158631	163235	32
29	120819	125661	130472	135253	140003	144724	149414	154076	158708	163312	31
30	120900	125742	130552	135332	140082	144802	149492	154153	158785	163388	30
31	120981	125822	130632	135412	140161	144880	149570	154231	158862	163465	29
32	121062	125903	130712	135491	140240	144959	149648	154308	158939	163541	28
33	121143	125983	130792	135571	140319	145037	149726	154385	159016	163618	27
34	121224	126063	130872	135650	140398	145116	149804	154463	159093	163694	26
35	121305	126144	130952	135729	140477	145194	149882	154540	159170	163771	25
36	121386	126224	131032	135809	140556	145272	149960	154618	159247	163847	24
37	121467	126304	131112	135888	140634	145351	150038	154695	159324	163923	23
38	121547	126385	131191	135967	140713	145429	150115	154772	159401	164000	22
39	121628	126465	131271	136047	140792	145507	150193	154850	159477	164076	21
40	121709	126546	131351	136126	140871	145586	150271	154927	159554	164153	20
41	121790	126626	131431	136205	140950	145664	150349	155004	159631	164229	19
42	121871	126706	131511	136285	141029	145742	150427	155082	159708	164306	18
43	121952	126787	131591	136364	141107	145821	150505	155159	159785	164382	17
44	122033	126867	131670	136443	141186	145899	150582	155237	159862	164458	16
45	122113	126947	131750	136522	141265	145977	150660	155314	159939	164535	15
46	122194	127028	131830	136602	141344	146056	150738	155391	160015	164611	14
47	122275	127108	131910	136681	141422	146134	150816	155468	160092	164687	13
48	122356	127188	131990	136761	141501	146212	150894	155546	160169	164764	12
49	122437	127268	132069	136840	141580	146290	150971	155623	160246	164840	11
50	122517	127349	132149	136919	141659	146369	151049	155700	160323	164916	10
51	122598	127429	132229	136998	141737	146447	151127	155778	160399	164993	9
52	122679	127509	132309	137077	141816	146525	151205	155855	160476	165069	8
53	122760	127589	132388	137157	141895	146603	151282	155932	160554	165145	7
54	122840	127670	132468	137236	141974	146682	151360	156009	160630	165222	6
55	122921	127750	132548	137315	142052	146760	151438	156087	160707	165298	5
56	123002	127830	132627	137394	142131	146838	151516	156164	160783	165374	4
57	123083	127910	132707	137473	142210	146916	151593	156241	160860	165450	3
58	123163	127990	132787	137553	142288	146994	151671	156318	160937	165527	2
59	123244	128071	132866	137632	142367	147073	151749	156395	161013	165603	1
60	123325	128151	132946	137711	142446	147151	151826	156473	161090	165679	0
	9 ^m	8 ^m	7 ^m	6 ^m	5 ^m	4 ^m	3 ^m	2 ^m	1 ^m	0 ^m	

3 Hours.

Log. Havensine. (f)

3 Hours.

	0 ^m	1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m	8 ^m	9 ^m	
	45 deg.				46 deg.				47 deg.		
0	0 ⁰	15 ⁰	30 ⁰	45 ⁰	0 ⁰	15 ⁰	30 ⁰	45 ⁰	0 ⁰	15 ⁰	0
1	15	165755	170316	174773	183756	188207	192631	197028	201399	205745	60
2	30	165832	170392	174942	183905	188355	192778	197174	201545	205889	58
3	45	165908	170467	174993	183979	188429	192851	197247	201617	205961	57
4	0	165984	170543	175074	184054	188503	192925	197320	201690	206033	56
5	15	166060	170619	175149	184128	188576	192998	197393	201762	206105	55
6	30	166137	170695	175225	184202	188650	193072	197466	201835	206178	54
7	45	166213	170770	175300	184277	188724	193145	197539	201908	206250	53
8	0	166289	170846	175375	184351	188798	193219	197613	201980	206322	52
9	15	166365	170922	175450	184425	188872	193292	197685	202053	206394	51
10	30	166441	170998	175526	184500	188946	193366	197759	202125	206466	50
11	45	166517	171073	175601	184574	189020	193439	197831	202198	206538	49
12	0	166594	171149	175676	184648	189094	193512	197905	202270	206610	48
13	15	166670	171225	175751	184723	189168	193586	197977	202343	206683	47
14	30	166746	171300	175827	184797	189241	193659	198050	202416	206755	46
15	45	166822	171376	175902	184871	189315	193733	198123	202488	206827	45
16	0	166898	171452	175977	184946	189389	193806	198196	202561	206899	44
17	15	166974	171527	176052	185020	189463	193879	198269	202633	206971	43
18	30	167051	171603	176127	185094	189537	193953	198342	202706	207043	42
19	45	167127	171678	176203	185168	189611	194026	198415	202778	207115	41
20	0	167203	171754	176278	185243	189684	194100	198488	202851	207187	40
21	15	167279	171830	176353	185317	189758	194173	198561	202923	207259	39
22	30	167355	171905	176428	185391	189832	194246	198634	202996	207331	38
23	45	167431	171981	176503	185465	189906	194319	198707	203068	207403	37
24	0	167507	172057	176578	185540	189980	194393	198780	203141	207475	36
25	15	167583	172132	176653	185614	190053	194466	198853	203213	207547	35
26	30	167659	172208	176729	185688	190127	194540	198926	203285	207619	34
27	45	167735	172283	176804	185762	190201	194613	198998	203358	207691	33
28	0	167811	172359	176879	185836	190275	194686	199071	203430	207763	32
29	15	167887	172434	176954	185911	190348	194759	199144	203503	207835	31
30	30	167963	172510	177029	185985	190422	194833	199217	203575	207907	30
31	45	168039	172586	177104	186059	190496	194906	199290	203648	207979	29
32	0	168115	172661	177179	186133	190570	194979	199363	203720	208051	28
33	15	168191	172737	177254	186207	190643	195053	199436	203792	208123	27
34	30	168267	172812	177329	186281	190717	195126	199508	203865	208195	26
35	45	168343	172888	177404	186356	190791	195199	199581	203937	208267	25
36	0	168419	172963	177479	186430	190864	195272	199654	204010	208339	24
37	15	168495	173039	177554	186504	190938	195346	199727	204082	208411	23
38	30	168571	173114	177629	186578	191012	195419	199800	204154	208483	22
39	45	168647	173190	177704	186652	191085	195492	199872	204227	208555	21
40	0	168723	173265	177779	186726	191159	195565	199945	204299	208627	20
41	15	168799	173341	177854	186800	191233	195638	200018	204371	208699	19
42	30	168875	173416	177929	186874	191306	195712	200091	204444	208771	18
43	45	168951	173491	178004	186948	191380	195785	200163	204516	208843	17
44	0	169027	173567	178079	187023	191454	195858	200236	204588	208915	16
45	15	169103	173642	178154	187097	191527	195931	200309	204661	208986	15
46	30	169178	173718	178229	187171	191601	196004	200382	204733	209058	14
47	45	169254	173793	178304	187245	191674	196078	200454	204805	209130	13
48	0	169330	173869	178379	187319	191748	196151	200527	204878	209202	12
49	15	169406	173944	178454	187393	191822	196224	200600	204950	209274	11
50	30	169482	174019	178529	187467	191895	196297	200673	205022	209346	10
51	45	169558	174095	178604	187541	191969	196370	200745	205094	209418	9
52	0	169634	174170	178679	187615	192042	196443	200818	205167	209490	8
53	15	169709	174246	178754	187689	192116	196516	200891	205239	209561	7
54	30	169785	174321	178829	187763	192190	196590	200963	205311	209633	6
55	45	169861	174396	178904	187837	192263	196663	201036	205383	209705	5
56	0	169937	174472	178979	187911	192337	196736	201109	205456	209777	4
57	15	170013	174547	179054	187985	192410	196809	201181	205528	209849	3
58	30	170089	174622	179128	188059	192484	196882	201254	205600	209920	2
59	45	170164	174698	179203	188133	192557	196955	201327	205672	209992	1
60	0	170240	174773	179278	188207	192631	197028	201399	205745	210064	0
	59 ^m	58 ^m	57 ^m	56 ^m	55 ^m	54 ^m	53 ^m	52 ^m	51 ^m	50 ^m	

20 Hours.

20 Hours.

	10 ^m	11 ^m	12 ^m	13 ^m	14 ^m	15 ^m	16 ^m	17 ^m	18 ^m	19 ^m		
	47 deg.			48 deg.			49 deg.					
0	0	9.210064	9.214358	9.218627	9.222870	9.227089	9.231284	9.235454	9.239600	9.243722	9.247821	60
1	15	210136	214429	218697	222941	227159	231353	235523	239669	243791	247889	59
2	30	210207	214501	218768	223011	227229	231423	235593	239738	243859	247957	58
3	45	210279	214572	218839	223082	227300	231493	235662	239807	243928	248025	57
4	0	9.210351	9.214643	9.218910	9.223152	9.227370	9.231562	9.235731	9.239876	9.243996	9.248094	56
5	15	210423	214715	218981	223223	227440	231632	235800	239944	244065	248162	55
6	30	210494	214786	219052	223293	227510	231702	235870	240013	244133	248230	54
7	45	210566	214857	219123	223364	227580	231771	235939	240082	244201	248298	53
8	0	9.210638	9.214929	9.219194	9.223434	9.227650	9.231841	9.236008	9.240151	9.244270	9.248366	52
9	15	210710	215000	219265	223505	227720	231911	236077	240220	244339	248434	51
10	30	210781	215071	219336	223575	227790	231980	236147	240289	244407	248502	50
11	45	210853	215142	219406	223646	227860	232050	236216	240358	244476	248570	49
12	0	9.210925	9.215214	9.219477	9.223716	9.227930	9.232120	9.236285	9.240426	9.244544	9.248638	48
13	15	210996	215285	219548	223786	228000	232189	236354	240495	244612	248706	47
14	30	211068	215356	219619	223857	228070	232259	236423	240564	244681	248774	46
15	45	211140	215427	219690	223927	228140	232329	236493	240633	244749	248842	45
16	0	9.211211	9.215499	9.219761	9.223998	9.228210	9.232398	9.236562	9.240702	9.244818	9.248910	44
17	15	211283	215570	219831	224068	228280	232468	236631	240770	244886	248978	43
18	30	211355	215641	219902	224139	228350	232537	236700	240839	244954	249046	42
19	45	211426	215712	219973	224209	228420	232607	236769	240908	245023	249114	41
20	0	9.211498	9.215784	9.220044	9.224279	9.228490	9.232676	9.236839	9.240977	9.245091	9.249182	40
21	15	211570	215855	220115	224350	228560	232746	236908	241046	245160	249250	39
22	30	211641	215926	220186	224420	228630	232816	236977	241114	245228	249318	38
23	45	211713	215997	220256	224490	228700	232885	237046	241183	245296	249386	37
24	0	9.211785	9.216068	9.220327	9.224561	9.228770	9.232955	9.237115	9.241252	9.245365	9.249454	36
25	15	211856	216140	220398	224631	228840	233024	237184	241321	245433	249522	35
26	30	211928	216211	220469	224702	228910	233094	237254	241389	245501	249590	34
27	45	211999	216282	220539	224772	228980	233163	237323	241458	245570	249658	33
28	0	9.212071	9.216353	9.220610	9.224842	9.229050	9.233233	9.237392	9.241527	9.245638	9.249726	32
29	15	212143	216424	220681	224912	229120	233302	237461	241595	245706	249794	31
30	30	212214	216495	220752	224983	229190	233372	237530	241664	245775	249862	30
31	45	212286	216566	220822	225053	229259	233441	237599	241733	245843	249930	29
32	0	9.212357	9.216638	9.220893	9.225123	9.229329	9.233511	9.237668	9.241802	9.245911	9.249998	28
33	15	212429	216709	220964	225194	229399	233580	237737	241870	245980	250065	27
34	30	212500	216780	221034	225264	229469	233650	237806	241939	246048	250133	26
35	45	212572	216851	221105	225334	229539	233719	237875	242008	246116	250201	25
36	0	9.212643	9.216922	9.221176	9.225405	9.229609	9.233789	9.237944	9.242076	9.246184	9.250269	24
37	15	212715	216993	221246	225475	229679	233858	238014	242145	246253	250337	23
38	30	212786	217064	221317	225545	229749	233928	238083	242214	246321	250405	22
39	45	212858	217135	221388	225615	229818	233997	238152	242282	246389	250473	21
40	0	9.212929	9.217206	9.221459	9.225686	9.229888	9.234067	9.238221	9.242351	9.246457	9.250541	20
41	15	213001	217277	221529	225756	229958	234136	238290	242420	246526	250608	19
42	30	213072	217349	221600	225826	230028	234205	238359	242488	246594	250676	18
43	45	213144	217420	221670	225896	230098	234275	238428	242557	246662	250744	17
44	0	9.213215	9.217491	9.221741	9.225967	9.230168	9.234344	9.238497	9.242625	9.246730	9.250812	16
45	15	213287	217562	221812	226037	230237	234414	238566	242694	246799	250880	15
46	30	213358	217633	221882	226107	230307	234483	238635	242763	246867	250948	14
47	45	213430	217704	221953	226177	230377	234552	238704	242831	246935	251015	13
48	0	9.213501	9.217775	9.222024	9.226247	9.230447	9.234622	9.238773	9.242900	9.247003	9.251083	12
49	15	213573	217846	222094	226318	230517	234691	238842	242968	247071	251151	11
50	30	213644	217917	222165	226388	230586	234761	238911	243037	247140	251219	10
51	45	213715	217988	222235	226458	230656	234830	238980	243106	247208	251287	9
52	0	9.213787	9.218059	9.222306	9.226528	9.230726	9.234899	9.239049	9.243174	9.247276	9.251354	8
53	15	213858	218130	222376	226598	230796	234969	239118	243243	247344	251422	7
54	30	213930	218201	222447	226668	230865	235038	239187	243311	247412	251490	6
55	45	214001	218272	222518	226739	230935	235107	239255	243380	247480	251558	5
56	0	9.214072	9.218343	9.222588	9.226809	9.231005	9.235177	9.239324	9.243448	9.247549	9.251626	4
57	15	214144	218414	222659	226879	231075	235246	239393	243517	247617	251693	3
58	30	214215	218485	222729	226949	231144	235315	239462	243585	247685	251761	2
59	45	214286	218556	222800	227019	231214	235385	239531	243654	247753	251829	1
60	0	9.214358	9.218627	9.222870	9.227089	9.231284	9.235454	9.239600	9.243722	9.247821	9.251897	0
		49 ^m	48 ^m	47 ^m	46 ^m	45 ^m	44 ^m	43 ^m	42 ^m	41 ^m	40 ^m	

	20 ^m	21 ^m	22 ^m	23 ^m	24 ^m	25 ^m	26 ^m	27 ^m	28 ^m	
	50 deg.				51 deg.				52 deg.	
0	0	15	30	45	0	15	30	45	0	15
0	9.251897	9.255949	9.259978	9.263985	9.267969	9.271930	9.275870	9.279788	9.283684	9.287559
1	15	251964	256016	260045	264051	268035	271996	275936	279853	283749
2	30	252032	256083	260112	264118	268101	272062	276001	279918	283813
3	45	252100	256151	260179	264184	268167	272128	276066	279983	283878
4	0	9.252167	9.256218	9.260246	9.264251	9.268234	9.272194	9.276132	9.280048	9.283943
5	15	252235	256285	260313	264317	268300	272260	276197	280113	284008
6	30	252303	256353	260380	264384	268366	272325	276263	280178	284072
7	45	252370	256420	260447	264451	268432	272391	276328	280243	284137
8	0	9.252438	9.256487	9.260514	9.264517	9.268498	9.272457	9.276394	9.280309	9.284202
9	15	252506	256555	260580	264584	268564	272523	276459	280374	284266
10	30	252573	256622	260647	264650	268631	272589	276525	280439	284331
11	45	252641	256689	260714	264717	268697	272654	276590	280504	284396
12	0	9.252709	9.256756	9.260781	9.264783	9.268763	9.272720	9.276655	9.280569	9.284461
13	15	252776	256824	260848	264850	268829	272786	276721	280634	284525
14	30	252844	256891	260915	264916	268895	272852	276786	280699	284590
15	45	252912	256958	260982	264983	268961	272917	276852	280764	284654
16	0	9.252979	9.257025	9.261049	9.265049	9.269027	9.272983	9.276917	9.280829	9.284719
17	15	253047	257093	261115	265116	269093	273049	276982	280894	284784
18	30	253115	257160	261182	265182	269160	273115	277048	280959	284849
19	45	253182	257227	261249	265249	269226	273180	277113	281024	284913
20	0	9.253250	9.257294	9.261316	9.265315	9.269292	9.273246	9.277178	9.281089	9.284978
21	15	253317	257362	261383	265382	269358	273312	277244	281154	285042
22	30	253385	257429	261450	265448	269424	273378	277309	281219	285107
23	45	253453	257496	261517	265514	269490	273443	277374	281284	285172
24	0	9.253520	9.257563	9.261583	9.265581	9.269556	9.273509	9.277440	9.281349	9.285236
25	15	253588	257630	261650	265647	269622	273575	277505	281414	285301
26	30	253655	257698	261717	265714	269688	273640	277570	281479	285366
27	45	253723	257765	261784	265780	269754	273706	277636	281544	285430
28	0	9.253790	9.257832	9.261851	9.265847	9.269820	9.273772	9.277701	9.281609	9.285495
29	15	253858	257899	261917	265913	269886	273837	277766	281674	285559
30	30	253926	257966	261984	265979	269952	273903	277832	281739	285624
31	45	253993	258033	262051	266046	270018	273969	277897	281803	285688
32	0	9.254061	9.258101	9.262118	9.266112	9.270084	9.274034	9.277962	9.281868	9.285753
33	15	254128	258168	262184	266179	270150	274100	278028	281933	285817
34	30	254196	258235	262251	266245	270216	274166	278093	281998	285882
35	45	254263	258302	262318	266311	270282	274231	278158	282063	285947
36	0	9.254331	9.258369	9.262385	9.266378	9.270348	9.274297	9.278223	9.282129	9.286011
37	15	254398	258436	262451	266444	270414	274362	278289	282193	286076
38	30	254466	258503	262518	266510	270480	274428	278354	282258	286140
39	45	254533	258570	262585	266577	270546	274494	278419	282323	286205
40	0	9.254601	9.258637	9.262652	9.266643	9.270612	9.274559	9.278484	9.282388	9.286269
41	15	254666	258705	262718	266709	270678	274625	278550	282452	286334
42	30	254735	258772	262785	266776	270744	274691	278615	282517	286398
43	45	254803	258839	262852	266842	270810	274756	278680	282582	286463
44	0	9.254870	9.258906	9.262918	9.266908	9.270876	9.274822	9.278745	9.282647	9.286527
45	15	254938	258973	262985	266975	270942	274887	278810	282712	286592
46	30	255005	259040	263052	267041	271008	274953	278876	282777	286656
47	45	255073	259107	263118	267107	271074	275018	278941	282842	286721
48	0	9.255140	9.259174	9.263185	9.267174	9.271140	9.275084	9.279006	9.282906	9.286785
49	15	255207	259241	263252	267240	271206	275149	279071	282971	286850
50	30	255275	259308	263318	267306	271272	275215	279136	283036	286914
51	45	255342	259375	263385	267372	271338	275281	279202	283101	286979
52	0	9.255410	9.259442	9.263452	9.267439	9.271404	9.275346	9.279267	9.283166	9.287043
53	15	255477	259509	263518	267505	271469	275412	279332	283230	287107
54	30	255545	259576	263585	267571	271535	275477	279397	283295	287172
55	45	255612	259643	263652	267638	271601	275543	279462	283360	287236
56	0	9.255679	9.259710	9.263718	9.267704	9.271667	9.275608	9.279527	9.283425	9.287301
57	15	255747	259777	263785	267770	271733	275674	279592	283490	287365
58	30	255814	259844	263851	267836	271799	275739	279658	283554	287430
59	45	255881	259911	263918	267902	271865	275805	279723	283619	287494
60	0	9.255949	9.259978	9.263985	9.267969	9.271930	9.275870	9.279788	9.283684	9.287559
	39 ^m	38 ^m	37 ^m	36 ^m	35 ^m	34 ^m	33 ^m	32 ^m	31 ^m	

3 Hours.

Log. Haversines. (1)

3 Hours.

	30 ^m	31 ^m	32 ^m	33 ^m	34 ^m	35 ^m	36 ^m	37 ^m	38 ^m	39 ^m	
	52 deg.			53 deg.			54 deg.				
0 ^h	291412	295244	299055	302845	306615	310364	314094	317803	321492	325161	60
15	291476	295307	299118	302908	306678	310427	314155	317864	321553	325222	59
30	291540	295371	299182	302971	306740	310489	314217	317926	321614	325283	58
45	291604	295435	299245	303034	306803	310551	314279	317987	321676	325344	57
0 ^h	291668	295498	299308	303097	306866	310614	314341	318049	321737	325405	56
15	291732	295562	299372	303160	306928	310676	314403	318111	321798	325466	55
30	291796	295626	299435	303223	306991	310738	314465	318172	321860	325527	54
45	291860	295689	299498	303286	307053	310800	314527	318234	321921	325588	53
0 ^h	291924	295753	299561	303349	307116	310863	314589	318296	321982	325649	52
15	291988	295817	299625	303412	307179	310925	314651	318357	322043	325710	51
30	292052	295880	299688	303475	307241	310987	314713	318419	322105	325771	50
45	292116	295944	299751	303538	307304	311050	314775	318480	322166	325832	49
0 ^h	292180	296008	299815	303601	307367	311112	314837	318542	322227	325893	48
15	292244	296071	299878	303664	307429	311174	314899	318604	322288	325954	47
30	292308	296135	299941	303727	307492	311236	314961	318665	322350	326015	46
45	292372	296198	300004	303790	307554	311299	315023	318727	322411	326076	45
0 ^h	292436	296262	300068	303853	307617	311361	315085	318788	322472	326136	44
15	292499	296326	300131	303915	307679	311423	315146	318850	322533	326197	43
30	292564	296389	300194	303978	307742	311485	315208	318911	322595	326258	42
45	292627	296453	300257	304041	307804	311547	315270	318973	322656	326319	41
0 ^h	292691	296516	300321	304104	307867	311610	315332	319035	322717	326380	40
15	292755	296580	300384	304167	307930	311672	315394	319096	322778	326441	39
30	292819	296644	300447	304230	307992	311734	315456	319158	322840	326502	38
45	292884	296707	300510	304293	308055	311796	315518	319219	322901	326563	37
0 ^h	292947	296771	300574	304356	308117	311858	315580	319281	322962	326624	36
15	293011	296834	300637	304418	308180	311921	315641	319342	323023	326684	35
30	293075	296898	300700	304481	308242	311983	315703	319404	323084	326745	34
45	293139	296961	300763	304544	308305	312045	315765	319465	323145	326806	33
0 ^h	293203	297025	300826	304607	308367	312107	315827	319527	323207	326867	32
15	293266	297088	300889	304670	308430	312169	315889	319588	323268	326928	31
30	293330	297152	300953	304733	308492	312231	315951	319650	323329	326989	30
45	293394	297215	301016	304796	308555	312294	316012	319711	323390	327049	29
0 ^h	293458	297279	301079	304858	308617	312356	316074	319773	323451	327110	28
15	293522	297342	301142	304921	308680	312418	316136	319834	323512	327171	27
30	293586	297406	301205	304984	308742	312480	316198	319896	323574	327232	26
45	293650	297469	301268	305047	308805	312542	316260	319957	323635	327293	25
0 ^h	293713	297533	301332	305110	308867	312604	316321	320019	323696	327354	24
15	293777	297596	301395	305172	308929	312666	316383	320080	323757	327414	23
30	293841	297660	301458	305235	308992	312729	316445	320141	323818	327475	22
45	293905	297723	301521	305298	309054	312791	316507	320203	323879	327536	21
0 ^h	293969	297787	301584	305361	309117	312853	316568	320264	323940	327597	20
15	294032	297850	301647	305423	309179	312915	316630	320326	324001	327657	19
30	294096	297914	301710	305485	309242	312977	316692	320387	324062	327718	18
45	294160	297977	301773	305549	309304	313039	316754	320448	324124	327779	17
0 ^h	294224	298041	301836	305612	309367	313101	316815	320510	324185	327840	16
15	294288	298104	301900	305674	309429	313163	316877	320571	324246	327900	15
30	294351	298167	301963	305737	309491	313225	316939	320633	324307	327961	14
45	294415	298231	302026	305800	309554	313287	317000	320694	324368	328022	13
0 ^h	294479	298294	302089	305863	309616	313349	317062	320756	324429	328083	12
15	294543	298358	302152	305925	309678	313411	317124	320817	324490	328143	11
30	294607	298421	302215	305988	309741	313473	317186	320878	324551	328204	10
45	294670	298485	302278	306051	309803	313535	317247	320940	324612	328265	9
0 ^h	294734	298548	302341	306114	309866	313597	317309	321001	324673	328326	8
15	294798	298611	302404	306176	309928	313659	317371	321062	324734	328386	7
30	294861	298675	302467	306239	309990	313722	317433	321124	324795	328447	6
45	294925	298738	302530	306302	310053	313783	317494	321185	324856	328508	5
0 ^h	294989	298801	302593	306364	310115	313846	317556	321246	324917	328568	4
15	295053	298865	302656	306427	310177	313907	317618	321308	324978	328629	3
30	295116	298928	302719	306490	310240	313970	317679	321369	325039	328690	2
45	295180	298992	302782	306552	310302	314031	317741	321430	325100	328750	1
0 ^h	295244	299055	302845	306615	310364	314094	317803	321492	325161	328811	0
15	295308	299118	302908	306678	310427	314155	317864	321553	325222	328872	
30	295371	299182	302971	306740	310489	314217	317926	321614	325283	328933	
45	295435	299245	303034	306803	310551	314279	317987	321676	325344	328994	
0 ^h	295498	299308	303097	306866	310614	314341	318049	321737	325405	329055	
15	295562	299372	303160	306928	310676	314403	318111	321798	325466	329116	
30	295626	299435	303223	306991	310738	314465	318172	321860	325527	329177	
45	295689	299498	303286	307053	310800	314527	318234	321921	325588	329238	
0 ^h	295753	299561	303349	307116	310863	314589	318296	321982	325649	329299	
15	295817	299625	303412	307179	310925	314651	318357	322043	325710	329360	
30	295880	299688	303475	307241	310987	314713	318419	322105	325771	329421	
45	295944	299751	303538	307304	311050	314775	318480	322166	325832	329482	
0 ^h	295998	299815	303601	307367	311112	314837	318542	322227	325893	329543	
15	296062	299878	303664	307429	311174	314899	318604	322288	325954	329604	
30	296126	299941	303727	307492	311236	314961	318665	322350	326015	329665	
45	296190	300004	303790	307554	311299	315023	318727	322411	326076	329726	
0 ^h	296254	300068	303853	307617	311361	315085	318788	322472	326136	329787	
15	296318	300131	303915	307679	311423	315146	318850	322533	326197	329848	
30	296382	300194	303978	307742	311485	315208	318911	322595	326258	329909	
45	296446	300257	304041	307804	311547	315270	318973	322656	326319	329970	
0 ^h	296510	300321	304104	307867	311610	315332	319035	322717	326380	330031	
15	296574	300384	304167	307930	311672	315394	319096	322778	326441	330092	
30	296638	300447	304230	307992	311734	315456	319158	322840	326502	330153	
45	296702	300510	304293	308055	311796	315518	319219	322901	326563	330214	
0 ^h	296766	300574	304356	308117	311858	315580	319281	322962	326624	330275	
15	296830	300637	304418	308180	311921	315641	319342	323023	326684	330336	
30	296894	300700	304481	308242	311983	315703	319404	323084	326745	330397	
45	296958	300763	304544	308305	312045	315765	319465	323145	326806	330458	
0 ^h	297022	300826	304607	308367	312107	315827	319527	323207	326867	330519	
15	297086	300889	304670	308430	312169	315889	319588	323268	326928	330580	
30	297150	300953	304733	308492	312231	315951	319650	323329	326989	330641	
45	297214	301016	304796	308555	312294	316012	319711	323390	327049	330702	
0 ^h											

	40 ^m	41 ^m	42 ^m	43 ^m	44 ^m	45 ^m	46 ^m	47 ^m	48 ^m	49 ^m
	55 deg.				56 deg.				57 deg.	
0	9.328811	9.332442	9.336053	9.339645	9.343219	9.346773	9.350309	9.353827	9.357326	9.360801
15	328872	332502	336113	339705	343278	346832	350368	353885	357384	360861
30	328933	332562	336173	339765	343337	346891	350427	353944	357442	360919
45	328993	332623	336233	339824	343397	346950	350485	354002	357500	360969
1	9.329054	9.332683	9.336293	9.339884	9.343456	9.347009	9.350544	9.354060	9.357558	9.361031
15	329114	332743	336353	339944	343515	347068	350603	354119	357617	361081
30	329176	332804	336413	340003	343575	347128	350662	354177	357675	361141
45	329236	332864	336473	340063	343634	347187	350720	354236	357733	361199
1	9.329296	9.332924	9.336513	9.340123	9.343694	9.347216	9.350779	9.354294	9.357791	9.361261
15	329357	332985	336593	340182	343753	347305	350838	354353	357849	361219
30	329418	333045	336653	340242	343812	347364	350897	354411	357907	361279
45	329478	333105	336713	340302	343872	347423	350955	354469	357965	361338
1	9.329539	9.333166	9.336773	9.340361	9.343931	9.347482	9.351014	9.354528	9.358023	9.361501
15	329599	333226	336833	340421	343990	347541	351073	354586	358081	361359
30	329660	333286	336893	340481	344050	347600	351131	354645	358140	361419
45	329721	333346	336953	340540	344109	347659	351190	354703	358198	361479
1	9.329781	9.333407	9.337013	9.340600	9.344168	9.347718	9.351249	9.354764	9.358256	9.361731
15	329842	333467	337073	340660	344228	347777	351308	354820	358314	361791
30	329902	333527	337133	340719	344287	347836	351366	354878	358372	361851
45	329963	333587	337193	340779	344346	347895	351425	354937	358430	361911
1	9.330024	9.333648	9.337253	9.340838	9.344406	9.347954	9.351484	9.354995	9.358488	9.361961
15	330084	333708	337312	340898	344465	348013	351542	355053	358546	362021
30	330145	333768	337372	340958	344524	348072	351601	355111	358604	362081
45	330205	333828	337432	341017	344583	348131	351660	355170	358662	362141
1	9.330266	9.333889	9.337492	9.341077	9.344643	9.348190	9.351718	9.355228	9.358720	9.362191
15	330326	333949	337552	341136	344702	348249	351777	355287	358778	362251
30	330387	334009	337612	341196	344761	348308	351836	355345	358836	362311
45	330447	334069	337672	341256	344820	348367	351894	355403	358894	362371
1	9.330508	9.334129	9.337732	9.341315	9.344880	9.348426	9.351953	9.355462	9.358953	9.362431
15	330568	334190	337792	341375	344939	348484	352011	355520	359010	362491
30	330629	334250	337852	341434	344998	348543	352070	355578	359069	362551
45	330689	334310	337911	341494	345057	348602	352129	355637	359127	362611
1	9.330750	9.334370	9.337971	9.341553	9.345117	9.348661	9.352187	9.355695	9.359185	9.362661
15	330810	334430	338031	341613	345176	348720	352246	355753	359243	362721
30	330871	334490	338091	341672	345235	348779	352305	355812	359301	362781
45	330931	334551	338151	341732	345294	348838	352363	355870	359359	362841
1	9.330992	9.334611	9.338211	9.341792	9.345354	9.348897	9.352422	9.355928	9.359417	9.362891
15	331052	334671	338270	341851	345313	348956	352480	355987	359475	362951
30	331113	334731	338330	341911	345372	349015	352539	356045	359533	363011
45	331173	334791	338390	341971	345431	349074	352597	356103	359590	363071
1	9.331314	9.334931	9.338540	9.342100	9.345590	9.349133	9.352656	9.356161	9.359649	9.363111
15	331294	334912	338510	342089	345649	349191	352715	356220	359706	363171
30	331355	334972	338570	342149	345709	349250	352773	356278	359764	363231
45	331415	335032	338629	342208	345768	349309	352832	356336	359822	363291
1	9.331475	9.335092	9.338689	9.342268	9.345827	9.349368	9.352890	9.356394	9.359880	9.363331
15	331536	335152	338749	342327	345886	349427	352949	356453	359938	363391
30	331596	335212	338809	342386	345945	349486	353007	356511	359996	363451
45	331657	335272	338869	342446	346005	349544	353066	356569	360054	363511
1	9.331717	9.335332	9.338928	9.342505	9.346064	9.349603	9.353125	9.356627	9.360112	9.363571
15	331778	335392	338988	342565	346123	349662	353183	356686	360170	363631
30	331838	335452	339048	342624	346182	349721	353242	356744	360228	363691
45	331898	335513	339108	342684	346241	349780	353300	356802	360286	363751
1	9.331959	9.335573	9.339167	9.342743	9.346300	9.349839	9.353359	9.356860	9.360344	9.363801
15	332019	335633	339227	342803	346359	349897	353417	356918	360402	363861
30	332080	335693	339287	342862	346419	349956	353476	356977	360460	363921
45	332140	335753	339347	342921	346478	350015	353534	357035	360517	363981
1	9.332200	9.335813	9.339406	9.342981	9.346537	9.350074	9.353593	9.357093	9.360575	9.364041
15	332261	335873	339466	343040	346596	350133	353651	357151	360633	364101
30	332321	335933	339526	343100	346655	350192	353710	357209	360691	364161
45	332381	335993	339586	343159	346714	350250	353768	357268	360749	364221
1	9.332442	9.336053	9.339645	9.343219	9.346773	9.350309	9.353827	9.357326	9.360801	9.364271
15	332502	336113	339705	343278	346832	350368	353885	357384	360861	364331
30	332562	336173	339765	343337	346891	350427	353944	357442	360919	364391
45	332623	336233	339824	343397	346950	350485	354002	357500	360969	364451
1	9.332683	9.336293	9.339884	9.343456	9.347009	9.350544	9.354060	9.357558	9.361031	9.364501
15	332743	336353	339944	343515	347068	350603	354119	357617	361081	364561
30	332804	336413	340003	343575	347128	350662	354177	357675	361141	364621
45	332864	336473	340063	343634	347187	350720	354236	357733	361199	364681
1	9.332924	9.336513	9.340123	9.343694	9.347216	9.350779	9.354294	9.357791	9.361261	9.364731
15	332985	336593	340182	343753	347305	350838	354353	357849	361219	364791
30	333045	336653	340242	343812	347364	350897	354411	357907	361279	364851
45	333105	336713	340302	343872	347423	350955	354469	357965	361338	364911
1	9.333166	9.336773	9.340361	9.343931	9.347482	9.351014	9.354528	9.358023	9.361501	9.364961
15	333226	336833	340421	343990	347541	351073	354586	358081	361559	364979
30	333286	336893	340481	344050	347600	351131	354645	358140	361619	365039
45	333346	336953	340540	344109	347659	351190	354703	358198	361679	365099
1	9.333407	9.337013	9.340600	9.344168	9.347718	9.351249	9.354764	9.358256	9.361731	9.365191
15	333467	337073	340660	344228	347777	351308	354820	358314	361791	365251
30	333527	337133	340719	344287	347836	351366	354878	358372	361851	365311
45	333587	337193	340779	344346	347895	351425	354937	358430	361911	365371
1	9.333648	9.337253	9.340838	9.344406	9.347954	9.351484	9.354995	9.358488	9.361961	9.365421
15	333708	337312	340898	344465	348013	351542	355053	358546	362021	365481
30	333768	337372	340958	344524	348072	351601	355111	358604	362081	365541
45	333828	337432	341017	344583	348131	351660	355170	358662	362141	365601
1	9.333889	9.337492	9.341077	9.344643	9.348190	9.351718	9.355228	9.358720	9.362191	9.365651
15	333949	337552	341136	344702	348249	351777	355287	358778	362251	365711
30	334009	337612	341196	344761	348308	351836	355345	358836	362311	365771
45	334069	337672	341256	344820	348367	351894	355403	358894	362371	365831
1	9.334129	9.337732	9.341315	9.344880	9.348426	9.351953	9.355462	9.358953	9.362431	9.365891
15	334190	337792	341375	344939	348484	352011	355520	359010	362491	365951
30	334250	337852	341434	344998	348543	352070	355578	359069	362551	366011
45	334310	337911	341494	345057	348602	352129	355637	359127	362611	366071
1	9.334370	9.337971	9.341553	9.345117	9.348661	9.352187	9.355695	9.359185	9.362661	9.366121
15	334430	338031	341613	345176	348720	352246	355753	359243	362721</	

3 Hours.

Log. Haversines. (1)

3 Hours.

	50 ^m	51 ^m	52 ^m	53 ^m	54 ^m	55 ^m	56 ^m	57 ^m	58 ^m	59 ^m	
	57 deg.			58 deg.			59 deg.				
0	364270	367715	371142	374552	377945	381320	384678	388018	391342	394650	60
5	364327	367772	371199	374609	378001	381376	384733	388074	391398	394704	59
10	364385	367830	371256	374666	378057	381432	384789	388130	391453	394759	58
15	364443	367887	371313	374722	378114	381488	384845	388185	391508	394814	57
20	364500	367944	371370	374779	378170	381544	384901	388241	391563	394869	56
25	364558	368001	371427	374836	378227	381600	384957	388296	391619	394924	55
30	364615	368059	371484	374892	378283	381656	385012	388352	391674	394979	54
35	364673	368116	371541	374949	378339	381712	385068	388407	391729	395034	53
40	364730	368173	371598	375006	378396	381768	385124	388463	391784	395089	52
45	364788	368230	371655	375062	378452	381824	385180	388518	391839	395144	51
50	364845	368287	371712	375119	378508	381881	385236	388574	391895	395199	50
55	364903	368345	371769	375176	378565	381937	385291	388629	391950	395254	49
60	364960	368402	371826	375232	378621	381993	385347	388685	392005	395309	48
65	365018	368459	371883	375289	378677	382049	385403	388740	392060	395364	47
70	365075	368516	371940	375345	378734	382105	385459	388796	392116	395419	46
75	365133	368574	371997	375402	378790	382161	385514	388851	392171	395474	45
80	365190	368631	372053	375459	378846	382217	385570	388907	392226	395529	44
85	365248	368688	372110	375515	378903	382273	385626	388962	392281	395583	43
90	365305	368745	372167	375572	378959	382329	385682	389017	392336	395638	42
95	365363	368802	372224	375628	379015	382385	385737	389073	392391	395693	41
100	365420	368859	372281	375685	379072	382441	385793	389128	392447	395748	40
105	365478	368917	372338	375742	379128	382497	385849	389184	392502	395803	39
110	365535	368974	372395	375798	379184	382553	385905	389239	392557	395858	38
115	365593	369031	372452	375855	379240	382609	385960	389293	392612	395913	37
120	365650	369088	372508	375911	379297	382665	386016	389349	392667	395968	36
125	365707	369145	372565	375968	379353	382721	386072	389405	392722	396023	35
130	365765	369202	372622	376024	379409	382777	386127	389461	392778	396077	34
135	365822	369260	372679	376081	379466	382833	386183	389516	392833	396132	33
140	365880	369317	372736	376138	379522	382889	386239	389572	392888	396187	32
145	365937	369374	372793	376194	379578	382945	386294	389627	392943	396242	31
150	365995	369431	372850	376251	379634	383001	386350	389683	392998	396297	30
155	366052	369488	372906	376307	379691	383057	386406	389738	393053	396352	29
160	366110	369545	372963	376364	379747	383113	386462	389793	393108	396407	28
165	366167	369602	373020	376420	379803	383169	386517	389849	393163	396461	27
170	366224	369659	373077	376478	379859	383225	386573	389904	393219	396516	26
175	366282	369717	373134	376533	379916	383281	386628	389959	393274	396571	25
180	366339	369774	373190	376590	379972	383337	386684	390015	393329	396626	24
185	366396	369831	373247	376646	380028	383392	386740	390070	393384	396681	23
190	366454	369888	373304	376703	380084	383448	386795	390126	393439	396735	22
195	366511	369945	373361	376759	380140	383504	386851	390181	393494	396790	21
200	366569	370002	373418	376816	380197	383560	386907	390236	393549	396845	20
205	366626	370059	373474	376872	380253	383616	386962	390292	393604	396900	19
210	366683	370116	373531	376929	380309	383672	387018	390347	393659	396955	18
215	366741	370173	373588	376985	380365	383728	387074	390402	393714	397009	17
220	366798	370230	373645	377042	380421	383784	387129	390458	393769	397064	16
225	366855	370287	373701	377098	380478	383840	387185	390513	393824	397119	15
230	366913	370344	373758	377155	380534	383896	387240	390568	393879	397174	14
235	366970	370401	373815	377211	380590	383951	387296	390624	393934	397228	13
240	367027	370458	373872	377268	380646	384007	387352	390679	393989	397283	12
245	367085	370515	373928	377324	380702	384063	387407	390734	394044	397338	11
250	367142	370572	373985	377380	380758	384119	387463	390790	394100	397393	10
255	367199	370629	374042	377437	380815	384175	387518	390845	394154	397447	9
260	367257	370686	374099	377493	380871	384231	387574	390900	394210	397502	8
265	367314	370744	374155	377550	380927	384287	387630	390955	394265	397557	7
270	367371	370801	374212	377606	380983	384343	387685	391011	394320	397612	6
275	367429	370858	374269	377663	381039	384398	387741	391066	394375	397666	5
280	367486	370915	374326	377719	381095	384454	387796	391121	394430	397721	4
285	367543	370972	374382	377775	381151	384510	387852	391177	394485	397776	3
290	367600	371028	374439	377832	381208	384566	387907	391232	394540	397831	2
295	367658	371085	374496	377888	381264	384622	387963	391287	394594	397885	1
300	367715	371142	374552	377945	381320	384678	388018	391342	394650	397940	0
	9 ^m	8 ^m	7 ^m	6 ^m	5 ^m	4 ^m	3 ^m	2 ^m	1 ^m	0 ^m	

3 Hours.

3 Hours.

	0 ^m	1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m	8 ^m
	60 deg.				61 deg.				62 de
0	0 ⁰	15 ⁰	30 ⁰	45 ⁰	0 ⁰	15 ⁰	30 ⁰	45 ⁰	0 ⁰
1	0 ¹	15 ¹	30 ¹	45 ¹	0 ¹	15 ¹	30 ¹	45 ¹	0 ¹
2	0 ²	15 ²	30 ²	45 ²	0 ²	15 ²	30 ²	45 ²	0 ²
3	0 ³	15 ³	30 ³	45 ³	0 ³	15 ³	30 ³	45 ³	0 ³
4	0 ⁴	15 ⁴	30 ⁴	45 ⁴	0 ⁴	15 ⁴	30 ⁴	45 ⁴	0 ⁴
5	0 ⁵	15 ⁵	30 ⁵	45 ⁵	0 ⁵	15 ⁵	30 ⁵	45 ⁵	0 ⁵
6	0 ⁶	15 ⁶	30 ⁶	45 ⁶	0 ⁶	15 ⁶	30 ⁶	45 ⁶	0 ⁶
7	0 ⁷	15 ⁷	30 ⁷	45 ⁷	0 ⁷	15 ⁷	30 ⁷	45 ⁷	0 ⁷
8	0 ⁸	15 ⁸	30 ⁸	45 ⁸	0 ⁸	15 ⁸	30 ⁸	45 ⁸	0 ⁸
9	0 ⁹	15 ⁹	30 ⁹	45 ⁹	0 ⁹	15 ⁹	30 ⁹	45 ⁹	0 ⁹
10	0 ¹⁰	15 ¹⁰	30 ¹⁰	45 ¹⁰	0 ¹⁰	15 ¹⁰	30 ¹⁰	45 ¹⁰	0 ¹⁰
11	0 ¹¹	15 ¹¹	30 ¹¹	45 ¹¹	0 ¹¹	15 ¹¹	30 ¹¹	45 ¹¹	0 ¹¹
12	0 ¹²	15 ¹²	30 ¹²	45 ¹²	0 ¹²	15 ¹²	30 ¹²	45 ¹²	0 ¹²
13	0 ¹³	15 ¹³	30 ¹³	45 ¹³	0 ¹³	15 ¹³	30 ¹³	45 ¹³	0 ¹³
14	0 ¹⁴	15 ¹⁴	30 ¹⁴	45 ¹⁴	0 ¹⁴	15 ¹⁴	30 ¹⁴	45 ¹⁴	0 ¹⁴
15	0 ¹⁵	15 ¹⁵	30 ¹⁵	45 ¹⁵	0 ¹⁵	15 ¹⁵	30 ¹⁵	45 ¹⁵	0 ¹⁵
16	0 ¹⁶	15 ¹⁶	30 ¹⁶	45 ¹⁶	0 ¹⁶	15 ¹⁶	30 ¹⁶	45 ¹⁶	0 ¹⁶
17	0 ¹⁷	15 ¹⁷	30 ¹⁷	45 ¹⁷	0 ¹⁷	15 ¹⁷	30 ¹⁷	45 ¹⁷	0 ¹⁷
18	0 ¹⁸	15 ¹⁸	30 ¹⁸	45 ¹⁸	0 ¹⁸	15 ¹⁸	30 ¹⁸	45 ¹⁸	0 ¹⁸
19	0 ¹⁹	15 ¹⁹	30 ¹⁹	45 ¹⁹	0 ¹⁹	15 ¹⁹	30 ¹⁹	45 ¹⁹	0 ¹⁹
20	0 ²⁰	15 ²⁰	30 ²⁰	45 ²⁰	0 ²⁰	15 ²⁰	30 ²⁰	45 ²⁰	0 ²⁰
21	0 ²¹	15 ²¹	30 ²¹	45 ²¹	0 ²¹	15 ²¹	30 ²¹	45 ²¹	0 ²¹
22	0 ²²	15 ²²	30 ²²	45 ²²	0 ²²	15 ²²	30 ²²	45 ²²	0 ²²
23	0 ²³	15 ²³	30 ²³	45 ²³	0 ²³	15 ²³	30 ²³	45 ²³	0 ²³
24	0 ²⁴	15 ²⁴	30 ²⁴	45 ²⁴	0 ²⁴	15 ²⁴	30 ²⁴	45 ²⁴	0 ²⁴
25	0 ²⁵	15 ²⁵	30 ²⁵	45 ²⁵	0 ²⁵	15 ²⁵	30 ²⁵	45 ²⁵	0 ²⁵
26	0 ²⁶	15 ²⁶	30 ²⁶	45 ²⁶	0 ²⁶	15 ²⁶	30 ²⁶	45 ²⁶	0 ²⁶
27	0 ²⁷	15 ²⁷	30 ²⁷	45 ²⁷	0 ²⁷	15 ²⁷	30 ²⁷	45 ²⁷	0 ²⁷
28	0 ²⁸	15 ²⁸	30 ²⁸	45 ²⁸	0 ²⁸	15 ²⁸	30 ²⁸	45 ²⁸	0 ²⁸
29	0 ²⁹	15 ²⁹	30 ²⁹	45 ²⁹	0 ²⁹	15 ²⁹	30 ²⁹	45 ²⁹	0 ²⁹
30	0 ³⁰	15 ³⁰	30 ³⁰	45 ³⁰	0 ³⁰	15 ³⁰	30 ³⁰	45 ³⁰	0 ³⁰
31	0 ³¹	15 ³¹	30 ³¹	45 ³¹	0 ³¹	15 ³¹	30 ³¹	45 ³¹	0 ³¹
32	0 ³²	15 ³²	30 ³²	45 ³²	0 ³²	15 ³²	30 ³²	45 ³²	0 ³²
33	0 ³³	15 ³³	30 ³³	45 ³³	0 ³³	15 ³³	30 ³³	45 ³³	0 ³³
34	0 ³⁴	15 ³⁴	30 ³⁴	45 ³⁴	0 ³⁴	15 ³⁴	30 ³⁴	45 ³⁴	0 ³⁴
35	0 ³⁵	15 ³⁵	30 ³⁵	45 ³⁵	0 ³⁵	15 ³⁵	30 ³⁵	45 ³⁵	0 ³⁵
36	0 ³⁶	15 ³⁶	30 ³⁶	45 ³⁶	0 ³⁶	15 ³⁶	30 ³⁶	45 ³⁶	0 ³⁶
37	0 ³⁷	15 ³⁷	30 ³⁷	45 ³⁷	0 ³⁷	15 ³⁷	30 ³⁷	45 ³⁷	0 ³⁷
38	0 ³⁸	15 ³⁸	30 ³⁸	45 ³⁸	0 ³⁸	15 ³⁸	30 ³⁸	45 ³⁸	0 ³⁸
39	0 ³⁹	15 ³⁹	30 ³⁹	45 ³⁹	0 ³⁹	15 ³⁹	30 ³⁹	45 ³⁹	0 ³⁹
40	0 ⁴⁰	15 ⁴⁰	30 ⁴⁰	45 ⁴⁰	0 ⁴⁰	15 ⁴⁰	30 ⁴⁰	45 ⁴⁰	0 ⁴⁰
41	0 ⁴¹	15 ⁴¹	30 ⁴¹	45 ⁴¹	0 ⁴¹	15 ⁴¹	30 ⁴¹	45 ⁴¹	0 ⁴¹
42	0 ⁴²	15 ⁴²	30 ⁴²	45 ⁴²	0 ⁴²	15 ⁴²	30 ⁴²	45 ⁴²	0 ⁴²
43	0 ⁴³	15 ⁴³	30 ⁴³	45 ⁴³	0 ⁴³	15 ⁴³	30 ⁴³	45 ⁴³	0 ⁴³
44	0 ⁴⁴	15 ⁴⁴	30 ⁴⁴	45 ⁴⁴	0 ⁴⁴	15 ⁴⁴	30 ⁴⁴	45 ⁴⁴	0 ⁴⁴
45	0 ⁴⁵	15 ⁴⁵	30 ⁴⁵	45 ⁴⁵	0 ⁴⁵	15 ⁴⁵	30 ⁴⁵	45 ⁴⁵	0 ⁴⁵
46	0 ⁴⁶	15 ⁴⁶	30 ⁴⁶	45 ⁴⁶	0 ⁴⁶	15 ⁴⁶	30 ⁴⁶	45 ⁴⁶	0 ⁴⁶
47	0 ⁴⁷	15 ⁴⁷	30 ⁴⁷	45 ⁴⁷	0 ⁴⁷	15 ⁴⁷	30 ⁴⁷	45 ⁴⁷	0 ⁴⁷
48	0 ⁴⁸	15 ⁴⁸	30 ⁴⁸	45 ⁴⁸	0 ⁴⁸	15 ⁴⁸	30 ⁴⁸	45 ⁴⁸	0 ⁴⁸
49	0 ⁴⁹	15 ⁴⁹	30 ⁴⁹	45 ⁴⁹	0 ⁴⁹	15 ⁴⁹	30 ⁴⁹	45 ⁴⁹	0 ⁴⁹
50	0 ⁵⁰	15 ⁵⁰	30 ⁵⁰	45 ⁵⁰	0 ⁵⁰	15 ⁵⁰	30 ⁵⁰	45 ⁵⁰	0 ⁵⁰
51	0 ⁵¹	15 ⁵¹	30 ⁵¹	45 ⁵¹	0 ⁵¹	15 ⁵¹	30 ⁵¹	45 ⁵¹	0 ⁵¹
52	0 ⁵²	15 ⁵²	30 ⁵²	45 ⁵²	0 ⁵²	15 ⁵²	30 ⁵²	45 ⁵²	0 ⁵²
53	0 ⁵³	15 ⁵³	30 ⁵³	45 ⁵³	0 ⁵³	15 ⁵³	30 ⁵³	45 ⁵³	0 ⁵³
54	0 ⁵⁴	15 ⁵⁴	30 ⁵⁴	45 ⁵⁴	0 ⁵⁴	15 ⁵⁴	30 ⁵⁴	45 ⁵⁴	0 ⁵⁴
55	0 ⁵⁵	15 ⁵⁵	30 ⁵⁵	45 ⁵⁵	0 ⁵⁵	15 ⁵⁵	30 ⁵⁵	45 ⁵⁵	0 ⁵⁵
56	0 ⁵⁶	15 ⁵⁶	30 ⁵⁶	45 ⁵⁶	0 ⁵⁶	15 ⁵⁶	30 ⁵⁶	45 ⁵⁶	0 ⁵⁶
57	0 ⁵⁷	15 ⁵⁷	30 ⁵⁷	45 ⁵⁷	0 ⁵⁷	15 ⁵⁷	30 ⁵⁷	45 ⁵⁷	0 ⁵⁷
58	0 ⁵⁸	15 ⁵⁸	30 ⁵⁸	45 ⁵⁸	0 ⁵⁸	15 ⁵⁸	30 ⁵⁸	45 ⁵⁸	0 ⁵⁸
59	0 ⁵⁹	15 ⁵⁹	30 ⁵⁹	45 ⁵⁹	0 ⁵⁹	15 ⁵⁹	30 ⁵⁹	45 ⁵⁹	0 ⁵⁹
60	0 ⁶⁰	15 ⁶⁰	30 ⁶⁰	45 ⁶⁰	0 ⁶⁰	15 ⁶⁰	30 ⁶⁰	45 ⁶⁰	0 ⁶⁰
	59 ^m	58 ^m	57 ^m	56 ^m	55 ^m	54 ^m	53 ^m	52 ^m	51 ^m

Log. Haversines. (1)										4 Hours.
10 ^m	11 ^m	12 ^m	13 ^m	14 ^m	15 ^m	16 ^m	17 ^m	18 ^m	19 ^m	
62 deg.										
0 ⁰	43 ⁰	0 ⁰	15 ⁰	30 ⁰	45 ⁰	0 ⁰	15 ⁰	30 ⁰	45 ⁰	60
9.429955	9.433070	9.436170	9.439255	9.442325	9.445379	9.448419	9.451445	9.454455	9.457451	59
430007	433122	436222	439306	442376	445430	448470	451495	454505	457501	58
430059	433174	436273	439358	442427	445481	448520	451545	454555	457551	57
430111	433226	436325	439409	442478	445532	448571	451595	454605	457601	56
430163	9.433277	9.436376	9.439460	9.442529	9.445583	9.448622	9.451646	9.454655	9.457651	55
430215	433329	436428	439511	442580	445633	448672	451696	454705	457700	54
430267	433381	436479	439563	442631	445684	448723	451746	454756	457750	53
430319	433433	436531	439614	442682	445735	448773	451797	454805	457800	52
430371	9.433485	9.436582	9.439665	9.442733	9.445786	9.448824	9.451847	9.454856	9.457850	51
430423	433536	436634	439716	442784	445836	448874	451897	454906	457899	50
430475	433588	436685	439768	442835	445887	448925	451947	454956	457949	49
430527	433640	436737	439819	442886	445938	448975	451998	455006	457999	48
430579	9.433692	9.436788	9.439870	9.442937	9.445989	9.449026	9.452048	9.455056	9.458049	47
430631	433743	436840	439921	442988	446039	449076	452098	455106	458099	46
430683	433795	436891	439973	443039	446090	449127	452148	455156	458148	45
430735	433847	436943	440024	443090	446141	449177	452199	455206	458198	44
430787	9.433898	9.436994	9.440075	9.443141	9.446192	9.449228	9.452249	9.455256	9.458248	43
430839	433950	437046	440126	443192	446242	449278	452299	455306	458298	42
430891	434002	437097	440177	443243	446293	449329	452349	455356	458347	41
430943	434054	437149	440229	443294	446344	449379	452400	455406	458397	40
430995	9.434105	9.437200	9.440280	9.443345	9.446394	9.449429	9.452450	9.455456	9.458447	39
431047	434157	437252	440331	443396	446445	449480	452500	455506	458497	38
431099	434209	437303	440382	443446	446496	449530	452550	455556	458546	37
431151	434260	437354	440433	443497	446547	449581	452600	455605	458596	36
431203	9.434312	9.437406	9.440485	9.443548	9.446597	9.449631	9.452651	9.455655	9.458646	35
431255	434364	437457	440536	443599	446648	449682	452701	455705	458695	34
431307	434415	437509	440587	443650	446699	449732	452751	455755	458745	33
431359	434467	437560	440638	443701	446749	449783	452801	455805	458795	32
431411	9.434519	9.437612	9.440689	9.443752	9.446800	9.449833	9.452851	9.455855	9.458845	31
431463	434570	437663	440741	443803	446851	449883	452902	455905	458894	30
431515	434622	437714	440792	443854	446901	449934	452952	455955	458944	29
431567	434674	437766	440843	443905	446952	449984	453002	456005	458994	28
431618	9.434725	9.437817	9.440894	9.443956	9.447003	9.450035	9.453052	9.456055	9.459043	27
431670	434777	437869	440945	444007	447053	450085	453102	456105	459093	26
431722	434829	437920	440996	444058	447104	450136	453152	456155	459143	25
431774	434880	437971	441047	444108	447155	450186	453203	456205	459192	24
431826	9.434932	9.438023	9.441099	9.444159	9.447205	9.450236	9.453253	9.456255	9.459242	23
431878	434984	438074	441150	444200	447256	450287	453303	456305	459292	22
431930	435035	438126	441201	444251	447306	450337	453353	456354	459341	21
431982	435087	438177	441252	444302	447357	450387	453403	456404	459391	20
432034	9.435139	9.438228	9.441303	9.444363	9.447408	9.450438	9.453453	9.456454	9.459441	19
432085	435190	438280	441354	444414	447458	450488	453503	456505	459490	18
432137	435242	438331	441405	444465	447509	450539	453554	456554	459540	17
432189	435293	438382	441456	444515	447560	450589	453604	456604	459590	16
432241	9.435345	9.438434	9.441508	9.444566	9.447610	9.450639	9.453654	9.456654	9.459639	15
432293	435397	438485	441559	444617	447661	450690	453704	456704	459689	14
432345	435448	438537	441610	444668	447711	450740	453750	456754	459739	13
432397	435500	438588	441661	444719	447762	450790	453804	456803	459788	12
432449	9.435551	9.438639	9.441712	9.444770	9.447813	9.450841	9.453853	9.456853	9.459838	11
432500	435603	438691	441763	444821	447863	450891	453904	456903	459887	10
432552	435655	438742	441814	444871	447914	450941	453955	456953	459937	9
432604	435706	438793	441865	444922	447964	450992	454005	457003	459987	8
432656	9.435758	9.438845	9.441916	9.444973	9.448015	9.451042	9.454055	9.457053	9.460036	7
432708	435809	438896	441967	444924	448065	451092	454105	457102	460086	6
432759	435861	438947	442018	445075	448116	451143	454155	457152	460136	5
432811	435912	438998	442069	445125	448167	451193	454205	457202	460185	4
432863	9.435964	9.439050	9.442120	9.445176	9.448217	9.451243	9.454255	9.457252	9.460235	3
432915	436016	439101	442172	445227	448268	451294	454305	457302	460284	2
432967	436067	439152	442223	445278	448318	451344	454355	457352	460334	1
433018	436119	439204	442274	445329	448369	451394	454405	457401	460383	0
433070	9.436170	9.439255	9.442325	9.445379	9.448419	9.451445	9.454455	9.457451	9.460433	
49 ^m	48 ^m	47 ^m	46 ^m	45 ^m	44 ^m	43 ^m	42 ^m	41 ^m	40 ^m	

	20 ^m	21 ^m	22 ^m	23 ^m	24 ^m	25 ^m	26 ^m	27 ^m	28 ^m
	65 deg.				66 deg.				67 deg.
0	0' 9.460433	15' 9.463400	30' 9.466354	45' 9.469293	0' 9.472218	15' 9.475129	30' 9.478026	45' 9.480909	0' 9.483779
1	15' 460483	463450	466403	469341	472260	475177	478074	480957	483827
2	30' 460532	463499	466452	469390	472315	475225	478122	481005	483874
3	45' 460582	463548	466501	469439	472363	475274	478170	481053	483922
4	0' 9.460631	15' 9.463598	30' 9.466550	45' 9.469488	0' 9.472412	15' 9.475322	30' 9.478218	45' 9.481101	0' 9.483970
5	15' 460681	463647	466599	469537	472461	475371	478267	481149	484018
6	30' 460730	463696	466648	469586	472509	475419	478315	481197	484065
7	45' 460780	463746	466697	469634	472558	475467	478363	481245	484113
8	0' 9.460830	15' 9.463795	30' 9.466746	45' 9.469683	0' 9.472606	15' 9.475516	30' 9.478411	45' 9.481293	0' 9.484161
9	15' 460879	463844	466795	469732	472655	475564	478459	481341	484208
10	30' 460929	463894	466844	469781	472704	475612	478507	481388	484256
11	45' 460978	463943	466893	469830	472752	475661	478555	481436	484304
12	0' 9.461028	15' 9.463992	30' 9.466942	45' 9.469879	0' 9.472801	15' 9.475709	30' 9.478604	45' 9.481484	0' 9.484351
13	15' 461077	464041	466991	469927	472849	475757	478652	481532	484399
14	30' 461127	464091	467041	469976	472898	475806	478700	481580	484447
15	45' 461176	464140	467090	470025	472947	475854	478748	481628	484494
16	0' 9.461226	15' 9.464189	30' 9.467139	45' 9.470074	0' 9.472995	15' 9.475903	30' 9.478796	45' 9.481676	0' 9.484542
17	15' 461275	464238	467188	470123	473044	475951	478844	481724	484590
18	30' 461325	464288	467237	470172	473092	475999	478892	481772	484637
19	45' 461374	464337	467286	470220	473141	476047	478940	481819	484685
20	0' 9.461424	15' 9.464386	30' 9.467335	45' 9.470269	0' 9.473189	15' 9.476096	30' 9.478988	45' 9.481867	0' 9.484733
21	15' 461473	464436	467384	470318	473238	476144	479037	481915	484780
22	30' 461523	464485	467433	470367	473287	476192	479085	481963	484828
23	45' 461572	464534	467482	470415	473335	476241	479133	482011	484875
24	0' 9.461622	15' 9.464583	30' 9.467531	45' 9.470464	0' 9.473384	15' 9.476289	30' 9.479181	45' 9.482059	0' 9.484923
25	15' 461671	464633	467580	470513	473432	476337	479229	482107	484971
26	30' 461721	464682	467629	470562	473481	476386	479277	482154	485018
27	45' 461770	464731	467678	470610	473529	476434	479325	482202	485066
28	0' 9.461820	15' 9.464780	30' 9.467727	45' 9.470659	0' 9.473578	15' 9.476482	30' 9.479373	45' 9.482250	0' 9.485114
29	15' 461869	464829	467776	470708	473626	476531	479421	482298	485161
30	30' 461919	464879	467825	470757	473675	476579	479469	482346	485209
31	45' 461968	464928	467874	470805	473723	476627	479517	482394	485256
32	0' 9.462017	15' 9.464977	30' 9.467923	45' 9.470854	0' 9.473772	15' 9.476675	30' 9.479565	45' 9.482441	0' 9.485304
33	15' 462067	465026	467972	470903	473820	476724	479613	482489	485352
34	30' 462116	465076	468021	470952	473869	476772	479661	482537	485399
35	45' 462166	465125	468070	471000	473917	476820	479709	482585	485447
36	0' 9.462215	15' 9.465174	30' 9.468119	45' 9.471049	0' 9.473966	15' 9.476869	30' 9.479757	45' 9.482633	0' 9.485494
37	15' 462265	465223	468168	471098	474014	476917	479806	482681	485542
38	30' 462314	465272	468217	471147	474063	476965	479854	482728	485589
39	45' 462363	465321	468265	471195	474111	477013	479902	482776	485637
40	0' 9.462413	15' 9.465371	30' 9.468314	45' 9.471244	0' 9.474160	15' 9.477062	30' 9.479950	45' 9.482824	0' 9.485685
41	15' 462462	465420	468363	471293	474208	477110	479998	482872	485732
42	30' 462512	465469	468412	471342	474257	477158	480046	482919	485780
43	45' 462561	465518	468462	471390	474305	477206	480094	482967	485827
44	0' 9.462611	15' 9.465567	30' 9.468510	45' 9.471439	0' 9.474354	15' 9.477255	30' 9.480142	45' 9.483015	0' 9.485875
45	15' 462660	465617	468559	471488	474402	477303	480190	483063	485922
46	30' 462709	465666	468608	471536	474451	477351	480238	483111	485971
47	45' 462759	465715	468657	471585	474499	477399	480286	483158	486017
48	0' 9.462808	15' 9.465764	30' 9.468706	45' 9.471634	0' 9.474547	15' 9.477447	30' 9.480334	45' 9.483206	0' 9.486065
49	15' 462857	465813	468755	471682	474596	477496	480382	483254	486113
50	30' 462907	465862	468804	471731	474644	477544	480430	483302	486160
51	45' 462956	465911	468853	471780	474693	477592	480478	483349	486208
52	0' 9.463006	15' 9.465961	30' 9.468901	45' 9.471828	0' 9.474741	15' 9.477640	30' 9.480526	45' 9.483397	0' 9.486255
53	15' 463055	466010	468950	471877	474790	477688	480574	483445	486303
54	30' 463104	466059	468999	471926	474838	477737	480621	483493	486350
55	45' 463154	466108	469048	471974	474886	477785	480669	483540	486398
56	0' 9.463203	15' 9.466157	30' 9.469097	45' 9.472023	0' 9.474935	15' 9.477833	30' 9.480717	45' 9.483588	0' 9.486445
57	15' 463252	466206	469146	472072	474983	477881	480765	483636	486493
58	30' 463302	466255	469195	472120	475032	477929	480813	483684	486540
59	45' 463351	466304	469244	472169	475080	477978	480861	483731	486588
60	0' 9.463400	15' 9.466354	30' 9.469293	45' 9.472218	0' 9.475129	15' 9.478026	30' 9.480909	45' 9.483779	0' 9.486635
61	15' 463449	466403	469341	472266	475177	478074	480957	483827	486683
62	30' 463498	466452	469390	472315	475225	478122	481005	483874	486731
63	45' 463547	466501	469439	472363	475274	478170	481053	483922	486779
64	0' 9.463596	15' 9.466550	30' 9.469488	45' 9.472412	0' 9.475322	15' 9.478218	30' 9.481101	45' 9.483970	0' 9.486827
65	15' 463645	466599	469537	472461	475371	478267	481149	484018	486875
66	30' 463694	466648	469586	472509	475419	478315	481197	484065	486923
67	45' 463743	466697	469634	472558	475467	478363	481245	484113	486971
68	0' 9.463792	15' 9.466746	30' 9.469683	45' 9.472606	0' 9.475516	15' 9.478411	30' 9.481293	45' 9.484161	0' 9.486970
69	15' 463841	466795	469732	472655	475564	478459	481341	484208	487018
70	30' 463890	466844	469781	472704	475612	478507	481388	484256	487066
71	45' 463939	466893	469830	472752	475661	478555	481436	484304	487114
72	0' 9.463988	15' 9.466942	30' 9.469879	45' 9.472801	0' 9.475709	15' 9.478604	30' 9.481484	45' 9.484351	0' 9.487162
73	15' 464037	466991	469927	472849	475757	478652	481532	484399	487210
74	30' 464086	467041	469976	472898	475806	478700	481580	484447	487258
75	45' 464135	467090	470025	472947	475854	478748	481628	484494	487306
76	0' 9.464184	15' 9.467139	30' 9.470074	45' 9.472995	0' 9.475903	15' 9.478796	30' 9.481676	45' 9.484542	0' 9.487354
77	15' 464233	467188	470123	473044	475951	478844	481724	484590	487402
78	30' 464282	467237	470172	473092	475999	478892	481772	484637	487450
79	45' 464331	467286	470220	473141	476047	478940	481819	484685	487498
80	0' 9.464380	15' 9.467335	30' 9.470269	45' 9.473189	0' 9.476096	15' 9.478988	30' 9.481867	45' 9.484733	0' 9.487546
81	15' 464429	467384	470318	473238	476144	479037	481915	484780	487594
82	30' 464478	467433	470367	473287	476192	479085	481963	484828	487642
83	45' 464527	467482	470415	473335	476241	479133	482011	484875	487690
84	0' 9.464576	15' 9.467531	30' 9.470464	45' 9.473384	0' 9.476289	15' 9.479181	30' 9.482059	45' 9.484923	0' 9.487640
85	15' 464625	467580	470513	473432	476337	479229	482107	484971	487688
86	30' 464674	467629	470562	473481	476386	479277	482154	485018	487736
87	45' 464723	467678	470610	473529	476434	479325	482202	485066	487784
88	0' 9.464772	15' 9.467727	30' 9.470659	45' 9.473578	0' 9.476482	15' 9.479373	30' 9.482250	45' 9.485114	0' 9.487832
89	15' 464821	467776	470708	473626	476531	479421	482298	485161	487880
90	30' 464870	467825	470757	473675	476579	479469	482346	485209	487928
91	45' 464919	467874	470805	473723	476627	479517	482394	485256	487976
92	0' 9.464968	15' 9.467923	30' 9.470854	45' 9.473772	0' 9.476675	15' 9.479565	30' 9.482441	45' 9.485304	0' 9.487924
93	15' 465017	467972	470903	473820	476724	479613	482489	485352	488012
94	30' 465066	468021	4709						

30"	31"	32"	33"	34"	35"	36"	37"	38"	39"	
67 deg.		68 deg.				69 deg.				
0.489478	9.492307	9.495123	9.497926	9.500716	9.503492	9.506256	9.509007	9.511745	9.514470	60
489525	492354	495170	497973	500752	503538	506302	509053	511790	514515	59
489572	492401	495217	498019	500809	503585	506348	509098	511836	514561	58
489620	492448	495264	498066	500855	503631	506394	509144	511881	514606	57
31' 489667	9.492495	9.495311	9.498112	9.500901	9.503677	9.506440	9.509190	9.511927	9.514651	56
489714	492542	495357	498159	500948	503723	506486	509235	511972	514697	55
489761	492589	495404	498206	500994	503769	506532	509281	512018	514742	54
489809	492636	495451	498252	501040	503815	506578	509327	512063	514787	53
32' 489856	9.492684	9.495498	9.498299	9.501087	9.503862	9.506624	9.509373	9.512109	9.514832	52
489903	492730	495544	498346	501133	503908	506669	509418	512154	514878	51
489950	492778	495591	498392	501179	503954	506715	509464	512200	514923	50
489998	492824	495638	498438	501226	504000	506761	509510	512245	514968	49
33' 490045	9.492872	9.495685	9.498435	9.501272	9.504046	9.506807	9.509555	9.512291	9.515014	48
490092	492918	495732	498532	501318	504092	506853	509601	512336	515059	47
490139	492966	495778	498578	501365	504138	506899	509647	512382	515104	46
490186	493012	495825	498625	501411	504184	506945	509692	512427	515149	45
34' 490234	9.493060	9.495872	9.498671	9.501457	9.504231	9.506991	9.509738	9.512473	9.515195	44
490281	493106	495919	498718	501504	504277	507037	509784	512518	515240	43
490328	493153	495966	498764	501550	504323	507083	509830	512564	515285	42
490375	493200	496012	498811	501596	504369	507128	509875	512609	515330	41
35' 490423	9.493247	9.496059	9.498857	9.501643	9.504415	9.507174	9.509921	9.512655	9.515376	40
490470	493294	496106	498904	501689	504461	507220	509967	512700	515421	39
490517	493341	496153	498951	501735	504507	507266	510012	512746	515466	38
490564	493388	496199	498997	501782	504553	507312	510058	512791	515511	37
36' 490611	9.493435	9.496246	9.499044	9.501828	9.504599	9.507358	9.510104	9.512836	9.515557	36
490658	493482	496253	499090	501874	504645	507404	510149	512882	515602	35
490706	493529	496339	499137	501921	504692	507450	510195	512927	515647	34
490753	493576	496386	499183	501967	504738	507495	510240	512973	515692	33
37' 490800	9.493623	9.496433	9.499230	9.502013	9.504784	9.507541	9.510286	9.513018	9.515737	32
490847	493670	496480	499276	502059	504830	507587	510332	513064	515783	31
490894	493717	496526	499323	502106	504876	507633	510377	513109	515828	30
490941	493764	496573	499369	502152	504922	507679	510423	513154	515873	29
38' 490989	9.493811	9.496620	9.499416	9.502198	9.504968	9.507725	9.510469	9.513200	9.515918	28
491036	493858	496666	499462	502244	505014	507771	510514	513245	515963	27
491083	493905	496713	499509	502291	505060	507816	510560	513291	516009	26
491130	493951	496760	499555	502337	505106	507862	510605	513336	516054	25
39' 491177	9.493998	9.496807	9.499601	9.502383	9.505152	9.507908	9.510651	9.513381	9.516099	24
491224	494045	496853	499648	502429	505198	507954	510697	513427	516144	23
491271	494092	496900	499694	502476	505244	508000	510742	513472	516189	22
491318	494139	496947	499741	502522	505290	508045	510788	513518	516235	21
40' 491366	9.494186	9.496993	9.499787	9.502568	9.505336	9.508091	9.510834	9.513563	9.516280	20
491413	494233	497040	499834	502614	505382	508137	510879	513608	516325	19
491460	494280	497087	499880	502661	505428	508183	510925	513654	516370	18
491507	494327	497133	499927	502707	505474	508229	510970	513699	516415	17
41' 491554	9.494374	9.497180	9.499973	9.502753	9.505520	9.508275	9.511016	9.513745	9.516460	16
491601	494420	497227	500019	502799	505566	508320	511061	513790	516506	15
491648	494467	497273	500066	502846	505612	508366	511107	513835	516551	14
491695	494514	497320	500112	502892	505658	508412	511153	513881	516596	13
42' 491742	9.494561	9.497367	9.500159	9.502938	9.505704	9.508458	9.511198	9.513926	9.516641	12
491789	494608	497413	500205	502984	505750	508503	511244	513971	516686	11
491837	494655	497460	500252	503031	505796	508549	511289	514017	516731	10
491884	494702	497516	500298	503077	505842	508595	511335	514062	516777	9
43' 491931	9.494749	9.497553	9.500345	9.503123	9.505888	9.508641	9.511380	9.514107	9.516822	8
491978	494795	497560	500391	503169	505934	508687	511426	514153	516867	7
492025	494842	497616	500437	503215	505980	508732	511472	514198	516912	6
492072	494889	497693	500484	503261	506026	508778	511517	514243	516957	5
44' 492119	9.494936	9.497740	9.500530	9.503308	9.506072	9.508824	9.511563	9.514289	9.517002	4
492166	494983	497786	500577	503354	506118	508870	511608	514334	517047	3
492213	495030	497833	500623	503400	506164	508915	511654	514379	517092	2
492260	495076	497879	500669	503446	506210	508961	511699	514425	517137	1
492307	9.495123	9.497926	9.500716	9.503492	9.506256	9.509007	9.511745	9.514470	9.517183	0
29"	28"	27"	26"	25"	24"	23"	22"	21"	20"	

	40 ^m	41 ^m	42 ^m	43 ^m	44 ^m	45 ^m	46 ^m	47 ^m	48 ^m
	70 deg.				71 deg.				72 deg.
0 ^m	9.517183	9.519883	9.522570	9.525245	9.527908	9.530559	9.533197	9.535823	9.538437
1 ^m	9.517228	9.519928	9.522615	9.525290	9.527952	9.530603	9.533241	9.535867	9.538481
2 ^m	9.517273	9.519972	9.522660	9.525334	9.527997	9.530647	9.533285	9.535911	9.538524
3 ^m	9.517318	9.520017	9.522704	9.525379	9.528041	9.530691	9.533328	9.535954	9.538568
4 ^m	9.517363	9.520062	9.522749	9.525423	9.528085	9.530735	9.533372	9.535998	9.538611
5 ^m	9.517408	9.520107	9.522794	9.525468	9.528129	9.530779	9.533416	9.536041	9.538655
6 ^m	9.517453	9.520152	9.522838	9.525512	9.528174	9.530823	9.533460	9.536085	9.538698
7 ^m	9.517498	9.520197	9.522883	9.525557	9.528218	9.530867	9.533504	9.536129	9.538741
8 ^m	9.517543	9.520242	9.522928	9.525601	9.528262	9.530911	9.533548	9.536172	9.538785
9 ^m	9.517588	9.520287	9.522972	9.525645	9.528306	9.530955	9.533592	9.536216	9.538828
10 ^m	9.517633	9.520331	9.523017	9.525690	9.528351	9.530999	9.533635	9.536260	9.538872
11 ^m	9.517679	9.520376	9.523062	9.525734	9.528395	9.531043	9.533679	9.536303	9.538915
12 ^m	9.517724	9.520421	9.523106	9.525779	9.528439	9.531087	9.533723	9.536347	9.538959
13 ^m	9.517769	9.520466	9.523151	9.525823	9.528483	9.531131	9.533767	9.536391	9.539003
14 ^m	9.517814	9.520511	9.523195	9.525868	9.528528	9.531175	9.533811	9.536434	9.539046
15 ^m	9.517859	9.520556	9.523240	9.525912	9.528572	9.531219	9.533855	9.536478	9.539089
16 ^m	9.517904	9.520601	9.523285	9.525957	9.528616	9.531263	9.533898	9.536521	9.539132
17 ^m	9.517949	9.520645	9.523329	9.526001	9.528660	9.531307	9.533942	9.536565	9.539176
18 ^m	9.517994	9.520690	9.523374	9.526045	9.528705	9.531351	9.533986	9.536609	9.539219
19 ^m	9.518039	9.520735	9.523419	9.526089	9.528749	9.531395	9.534030	9.536652	9.539263
20 ^m	9.518084	9.520780	9.523463	9.526134	9.528793	9.531439	9.534074	9.536696	9.539306
21 ^m	9.518129	9.520825	9.523508	9.526179	9.528837	9.531483	9.534117	9.536739	9.539349
22 ^m	9.518174	9.520870	9.523552	9.526223	9.528881	9.531527	9.534161	9.536783	9.539393
23 ^m	9.518219	9.520914	9.523597	9.526267	9.528926	9.531571	9.534205	9.536827	9.539436
24 ^m	9.518264	9.520959	9.523642	9.526312	9.528970	9.531615	9.534249	9.536870	9.539479
25 ^m	9.518309	9.521004	9.523686	9.526356	9.529014	9.531659	9.534293	9.536914	9.539523
26 ^m	9.518354	9.521049	9.523731	9.526401	9.529058	9.531703	9.534336	9.536957	9.539566
27 ^m	9.518399	9.521094	9.523775	9.526445	9.529102	9.531747	9.534380	9.537001	9.539610
28 ^m	9.518444	9.521138	9.523820	9.526489	9.529147	9.531791	9.534424	9.537045	9.539653
29 ^m	9.518489	9.521183	9.523865	9.526534	9.529191	9.531835	9.534468	9.537089	9.539697
30 ^m	9.518534	9.521228	9.523909	9.526578	9.529235	9.531879	9.534512	9.537133	9.539740
31 ^m	9.518579	9.521273	9.523954	9.526623	9.529279	9.531923	9.534555	9.537175	9.539783
32 ^m	9.518624	9.521318	9.523998	9.526667	9.529323	9.531967	9.534599	9.537219	9.539827
33 ^m	9.518669	9.521362	9.524043	9.526711	9.529367	9.532011	9.534643	9.537262	9.539870
34 ^m	9.518714	9.521407	9.524088	9.526756	9.529412	9.532055	9.534687	9.537306	9.539913
35 ^m	9.518759	9.521452	9.524132	9.526800	9.529456	9.532099	9.534730	9.537349	9.539957
36 ^m	9.518804	9.521497	9.524177	9.526844	9.529500	9.532143	9.534774	9.537393	9.540000
37 ^m	9.518849	9.521541	9.524221	9.526889	9.529544	9.532187	9.534818	9.537437	9.540043
38 ^m	9.518894	9.521586	9.524266	9.526933	9.529588	9.532231	9.534862	9.537480	9.540087
39 ^m	9.518939	9.521631	9.524310	9.526977	9.529632	9.532275	9.534905	9.537524	9.540130
40 ^m	9.518984	9.521676	9.524355	9.527022	9.529676	9.532319	9.534949	9.537567	9.540174
41 ^m	9.519029	9.521720	9.524399	9.527066	9.529721	9.532363	9.534993	9.537611	9.540217
42 ^m	9.519074	9.521765	9.524444	9.527111	9.529765	9.532407	9.535037	9.537654	9.540260
43 ^m	9.519119	9.521810	9.524489	9.527155	9.529809	9.532451	9.535080	9.537698	9.540303
44 ^m	9.519164	9.521855	9.524533	9.527199	9.529853	9.532495	9.535124	9.537741	9.540347
45 ^m	9.519209	9.521899	9.524578	9.527243	9.529897	9.532539	9.535168	9.537785	9.540390
46 ^m	9.519254	9.521944	9.524622	9.527288	9.529941	9.532582	9.535211	9.537828	9.540433
47 ^m	9.519299	9.521989	9.524667	9.527332	9.529985	9.532626	9.535255	9.537872	9.540477
48 ^m	9.519344	9.522034	9.524711	9.527376	9.530029	9.532670	9.535299	9.537915	9.540520
49 ^m	9.519389	9.522078	9.524756	9.527421	9.530074	9.532714	9.535343	9.537959	9.540563
50 ^m	9.519433	9.522123	9.524800	9.527465	9.530118	9.532758	9.535386	9.538003	9.540607
51 ^m	9.519478	9.522168	9.524845	9.527509	9.530162	9.532802	9.535430	9.538046	9.540650
52 ^m	9.519523	9.522213	9.524889	9.527554	9.530206	9.532846	9.535474	9.538090	9.540693
53 ^m	9.519568	9.522257	9.524934	9.527598	9.530250	9.532890	9.535517	9.538133	9.540737
54 ^m	9.519613	9.522302	9.524978	9.527642	9.530294	9.532934	9.535561	9.538176	9.540780
55 ^m	9.519658	9.522347	9.525023	9.527687	9.530338	9.532977	9.535605	9.538220	9.540823
56 ^m	9.519703	9.522391	9.525067	9.527731	9.530382	9.533021	9.535648	9.538263	9.540866
57 ^m	9.519748	9.522436	9.525112	9.527775	9.530426	9.533065	9.535692	9.538307	9.540910
58 ^m	9.519793	9.522481	9.525156	9.527820	9.530470	9.533109	9.535736	9.538350	9.540953
59 ^m	9.519838	9.522525	9.525201	9.527864	9.530514	9.533153	9.535779	9.538394	9.540997
60 ^m	9.519883	9.522570	9.525245	9.527908	9.530559	9.533197	9.535823	9.538437	9.541040
	19 ^m	18 ^m	17 ^m	16 ^m	15 ^m	14 ^m	13 ^m	12 ^m	11 ^m

50 ^m	51 ^m	52 ^m	53 ^m	54 ^m	55 ^m	56 ^m	57 ^m	58 ^m	59 ^m	
72 deg.		73 deg.				74 deg.				
9.543630	9.546208	9.548775	9.551330	9.553874	9.556406	9.558926	9.561435	9.563932	9.566419	60
543673	546251	548818	551373	553916	556448	558968	561477	563974	566460	59
543716	546294	548861	551415	553958	556490	559010	561518	564016	566502	58
543759	546337	548903	551458	554001	556532	559052	561560	564057	566543	57
9.543802	9.546380	9.548946	9.551500	9.554043	9.556574	9.559094	9.561602	9.564099	9.566584	56
543845	546423	548989	551543	554085	556616	559136	561644	564140	566626	55
543888	546466	549031	551585	554127	556658	559177	561685	564182	566667	54
543931	546508	549074	551628	554170	556700	559219	561727	564223	566708	53
9.543974	9.546551	9.549117	9.551670	9.554212	9.556742	9.559261	9.561769	9.564265	9.566750	52
544017	546594	549159	551712	554254	556784	559303	561810	564306	566791	51
544061	546637	549202	551755	554297	556826	559345	561852	564348	566832	50
544103	546680	549244	551797	554339	556869	559387	561894	564389	566874	49
9.544147	9.546723	9.549287	9.551840	9.554381	9.556911	9.559429	9.561935	9.564431	9.566915	48
544190	546766	549330	551882	554423	556953	559471	561977	564472	566956	47
544233	546808	549372	551925	554466	556995	559513	562019	564514	566998	46
544276	546851	549415	551967	554507	557037	559554	562061	564555	567039	45
9.544319	9.546894	9.549458	9.552010	9.554550	9.557079	9.559596	9.562102	9.564597	9.567080	44
544362	546937	549500	552052	554592	557121	559638	562144	564638	567121	43
544405	546980	549543	552095	554635	557163	559680	562186	564680	567163	42
544448	547022	549586	552137	554677	557205	559722	562227	564721	567204	41
9.544491	9.547065	9.549628	9.552179	9.554719	9.557247	9.559764	9.562269	9.564763	9.567245	40
544534	547108	549671	552222	554761	557289	559805	562311	564804	567287	39
544577	547151	549713	552264	554803	557331	559847	562352	564846	567328	38
544620	547194	549756	552307	554846	557373	559889	562394	564887	567369	37
9.544663	9.547237	9.549799	9.552349	9.554888	9.557415	9.559931	9.562435	9.564929	9.567411	36
544706	547279	549814	552391	554930	557457	559973	562477	564970	567452	35
544749	547322	549858	552434	554972	557499	560015	562519	565012	567493	34
544792	547365	549907	552476	555014	557541	560057	562560	565053	567534	33
9.544825	9.547408	9.549969	9.552519	9.555057	9.557583	9.560098	9.562602	9.565094	9.567576	32
544878	547450	550012	552561	555099	557625	560140	562644	565136	567617	31
544921	547493	550054	552603	555141	557667	560182	562685	565177	567658	30
544964	547536	550097	552646	555183	557709	560224	562727	565219	567699	29
9.545007	9.547579	9.550139	9.552688	9.555226	9.557751	9.560266	9.562769	9.565260	9.567741	28
545050	547622	550182	552731	555268	557793	560307	562810	565302	567782	27
545093	547664	550224	552773	555310	557835	560349	562852	565343	567823	26
545135	547707	550267	552815	555352	557877	560391	562893	565384	567864	25
9.545178	9.547750	9.550310	9.552858	9.555394	9.557919	9.560433	9.562935	9.565426	9.567906	24
545221	547793	550352	552900	555436	557961	560475	562977	565467	567947	23
545264	547835	550395	552942	555479	558003	560516	563018	565509	567988	22
545307	547878	550437	552985	555521	558045	560558	563060	565550	568029	21
9.545350	9.547921	9.550480	9.553027	9.555563	9.558087	9.560600	9.563101	9.565592	9.568070	20
545393	547964	550522	553070	555605	558129	560642	563143	565633	568112	19
545436	548006	550565	553112	555647	558171	560684	563185	565674	568153	18
545479	548049	550607	553154	555689	558213	560725	563226	565716	568194	17
9.545522	9.548092	9.550650	9.553197	9.555732	9.558255	9.560767	9.563268	9.565757	9.568235	16
545565	548135	550693	553239	555774	558297	560809	563309	565798	568276	15
545608	548177	550735	553281	555816	558339	560851	563351	565840	568318	14
545651	548220	550778	553324	555858	558381	560892	563392	565881	568359	13
9.545694	9.548263	9.550820	9.553366	9.555900	9.558423	9.560934	9.563434	9.565923	9.568400	12
545737	548305	550863	553408	555942	558465	560976	563476	565964	568441	11
545780	548348	550905	553451	555984	558507	561018	563517	566005	568483	10
545822	548391	550948	553493	556027	558549	561059	563559	566047	568524	9
9.545865	9.548434	9.550990	9.553535	9.556069	9.558591	9.561101	9.563600	9.566088	9.568565	8
545908	548476	551033	553578	556111	558633	561143	563642	566130	568606	7
545951	548519	551075	553620	556153	558675	561185	563683	566171	568647	6
545994	548562	551118	553662	556195	558716	561226	563725	566212	568688	5
9.546037	9.548604	9.551160	9.553705	9.556237	9.558758	9.561268	9.563767	9.566254	9.568730	4
546080	548647	551203	553747	556279	558800	561310	563808	566295	568771	3
546123	548690	551245	553789	556321	558842	561352	563850	566336	568802	2
546166	548732	551288	553831	556364	558884	561393	563891	566378	568853	1
9.546208	9.548775	9.551330	9.553874	9.556406	9.558926	9.561435	9.563932	9.566419	9.568894	0
9 ^m	8 ^m	7 ^m	6 ^m	5 ^m	4 ^m	3 ^m	2 ^m	1 ^m	0 ^m	

	0 ^m	1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m	8 ^m
	75 deg.				76 deg.				77 deg.
0	0°	15'	30'	45'	0°	15'	30'	45'	0°
1	568894	571358	573811	576253	578684	581104	583513	585911	588299
15	568935	571399	573852	576294	578724	581144	583553	585951	588339
30	568977	571440	573893	576334	578765	581184	583593	585991	588379
45	569018	571481	573933	576375	578805	581225	583633	586031	588418
1	569059	571522	573974	576415	578846	581265	583673	586071	588458
15	569100	571563	574015	576456	578886	581305	583713	586111	588498
30	569141	571604	574056	576497	578926	581345	583753	586151	588537
45	569182	571645	574097	576537	578967	581386	583793	586191	588577
1	569223	571686	574137	576578	579007	581426	583834	586230	588617
15	569265	571727	574178	576618	579048	581466	583873	586270	588656
30	569306	571768	574219	576659	579088	581506	583914	586310	588696
45	569347	571809	574260	576699	579128	581546	583954	586350	588736
1	569388	571850	574300	576740	579169	581587	583994	586390	588775
15	569429	571891	574341	576781	579209	581627	584034	586430	588815
30	569470	571932	574382	576821	579250	581667	584074	586470	588855
45	569511	571973	574423	576862	579290	581707	584114	586509	588894
1	569552	572013	574463	576902	579330	581747	584154	586549	588934
15	569593	572054	574504	576943	579371	581788	584194	586589	588974
30	569635	572095	574545	576983	579411	581828	584234	586629	589013
45	569676	572136	574586	577024	579451	581868	584274	586669	589053
1	569717	572177	574626	577065	579492	581908	584314	586709	589093
15	569758	572218	574667	577105	579532	581948	584354	586748	589132
30	569799	572259	574708	577146	579573	581989	584394	586788	589172
45	569840	572300	574748	577186	579613	582029	584434	586828	589212
1	569881	572341	574789	577227	579653	582069	584474	586868	589251
15	569922	572382	574830	577267	579694	582109	584514	586908	589291
30	569963	572423	574871	577308	579734	582149	584554	586947	589330
45	570004	572463	574911	577348	579774	582189	584594	586987	589370
1	570046	572504	574952	577389	579815	582230	584634	587027	589410
15	570087	572545	574993	577429	579855	582270	584674	587067	589450
30	570128	572586	575033	577470	579895	582310	584714	587107	589489
45	570169	572627	575074	577510	579936	582350	584754	587146	589529
1	570210	572668	575115	577551	579976	582390	584794	587186	589568
15	570251	572709	575155	577591	580016	582430	584833	587226	589608
30	570292	572750	575196	577632	580057	582470	584873	587266	589647
45	570333	572790	575237	577672	580097	582511	584913	587306	589687
1	570374	572831	575278	577713	580137	582551	584953	587345	589727
15	570415	572872	575318	577753	580177	582591	584993	587385	589766
30	570456	572913	575359	577794	580218	582631	585033	587425	589806
45	570497	572954	575400	577834	580258	582671	585073	587465	589845
1	570538	572995	575440	577875	580299	582711	585113	587504	589885
15	570579	573036	575480	577915	580339	582751	585153	587544	589924
30	570620	573076	575522	577956	580379	582792	585193	587584	589964
45	570661	573117	575562	577996	580419	582832	585233	587624	590004
1	570702	573158	575603	578037	580460	582872	585273	587663	590043
15	570743	573199	575644	578077	580500	582912	585313	587703	590083
30	570784	573240	575684	578118	580540	582952	585353	587743	590122
45	570825	573281	575725	578158	580580	582992	585393	587783	590162
1	570866	573321	575766	578199	580621	583032	585433	587822	590202
15	570907	573362	575806	578239	580661	583072	585473	587862	590241
30	570948	573403	575847	578280	580701	583112	585513	587902	590281
45	570989	573444	575887	578320	580742	583152	585552	587942	590320
1	571030	573485	575928	578360	580782	583193	585592	587981	590360
15	571071	573525	575969	578401	580822	583233	585632	588021	590399
30	571112	573566	576009	578441	580862	583273	585672	588061	590439
45	571153	573607	576050	578482	580903	583313	585712	588101	590478
1	571194	573648	576091	578522	580943	583353	585752	588140	590518
15	571235	573689	576131	578563	580983	583393	585792	588180	590557
30	571276	573730	576172	578603	581023	583433	585832	588220	590597
45	571317	573770	576212	578643	581064	583473	585872	588259	590637
1	571358	573811	576253	578684	581104	583513	585911	588299	590676
59 ^m									
58 ^m									
57 ^m									
56 ^m									
55 ^m									
54 ^m									
53 ^m									
52 ^m									
51 ^m									

8 Hours

Log. Havensines. (t)

5 Hours.

	10 ^m	11 ^m	12 ^m	13 ^m	14 ^m	15 ^m	16 ^m	17 ^m	18 ^m	19 ^m	
	77 deg.			78 deg.			79 deg.				
0	9.593042	9.593398	9.597744	9.600078	9.602403	9.604717	9.607021	9.609315	9.611598	9.613872	60
15	593082	59 437	597783	600117	602442	604756	607059	609353	611636	613909	59
30	593121	595477	597822	600156	602480	604794	607098	609391	611674	613947	58
45	593160	595516	597861	600195	602519	604833	607136	609429	611712	613985	57
31	9.593200	9.595555	9.597900	9.600234	9.602558	9.604871	9.607174	9.609467	9.611750	9.614023	56
15	593239	595594	597939	600273	602596	604910	607213	609505	611788	614061	55
30	593279	595633	597978	600311	602635	604948	607251	609544	611826	614098	54
45	593318	595672	598017	600350	602673	604987	607289	609582	611864	614136	53
32	9.593357	9.595712	9.598056	9.600389	9.602712	9.605025	9.607327	9.609620	9.611902	9.614174	52
15	593396	595751	598095	600428	602751	605063	607366	609658	612092	9.614212	51
30	593436	595790	598133	600467	602789	605102	607404	609696	611978	614250	50
45	593475	595829	598172	600506	602828	605140	607442	609734	612016	614287	49
33	9.593514	9.595868	9.598211	9.600544	9.602867	9.605179	9.607481	9.609772	9.612054	9.614325	48
15	593554	595907	598250	600583	602905	605217	607519	609903	612092	9.614363	47
30	593593	595946	598289	600622	602944	605256	607557	609948	612130	614401	46
45	593632	595985	598328	600661	602983	605294	607595	609986	612167	614438	45
34	9.593672	9.596025	9.598367	9.600699	9.603021	9.605333	9.607634	9.609925	9.612205	9.614476	44
15	593711	596064	598406	600738	603059	605371	607672	609963	612243	614514	43
30	593750	596103	598445	600777	603098	605409	607710	610001	612281	614552	42
45	593789	596142	598484	600816	603137	605448	607748	610039	612319	614590	41
35	9.593829	9.596181	9.598523	9.600854	9.603176	9.605486	9.607787	9.610077	9.612357	9.614627	40
15	593868	596220	598562	600893	603215	605525	607825	610115	612395	614665	39
30	593907	596259	598601	600932	603253	605563	607862	610153	612433	614703	38
45	593947	596299	598640	600971	603291	605601	607901	610191	612471	614740	37
36	9.593986	9.596338	9.598679	9.601010	9.603330	9.605640	9.607940	9.610229	9.612509	9.614779	36
15	594025	596377	598718	601048	603368	605678	607978	610267	612547	614816	35
30	594065	596416	598757	601087	603407	605717	608016	610305	612585	614854	34
45	594104	596455	598796	601126	603446	605755	608054	610344	612622	614892	33
37	9.594143	9.596494	9.598835	9.601165	9.603484	9.605794	9.608093	9.610382	9.612660	9.614929	32
15	594182	596533	598873	601203	603523	605832	608131	610420	612698	614967	31
30	594222	596572	598912	601242	603561	605870	608169	610458	612736	615005	30
45	594261	596611	598951	601281	603600	605909	608207	610496	612774	615042	29
38	9.594300	9.596650	9.598990	9.601320	9.603638	9.605947	9.608246	9.610534	9.612812	9.615080	28
15	594339	596689	599029	601358	603677	605986	608284	610572	612850	615118	27
30	594379	596729	599068	601397	603716	606024	608322	610610	612888	615156	26
45	594418	596768	599107	601436	603754	606062	608360	610648	612926	615193	25
39	9.594457	9.596807	9.599146	9.601474	9.603793	9.606101	9.608398	9.610686	9.612963	9.615231	24
15	594496	596846	599185	601513	603831	606139	608436	610724	613001	615268	23
30	594536	596885	599224	601552	603870	606177	608475	610762	613039	615306	22
45	594575	596924	599262	601591	603908	606216	608513	610800	613077	615344	21
40	9.594614	9.596963	9.599301	9.601629	9.603947	9.606254	9.608551	9.610838	9.613115	9.615382	20
15	594653	597002	599340	601668	603985	606293	608589	610876	613153	615419	19
30	594693	597041	599379	601707	604024	606331	608628	610914	613191	615457	18
45	594732	597080	599418	601745	604063	606369	608666	610952	613228	615495	17
41	9.594771	9.597119	9.599457	9.601784	9.604101	9.606408	9.608704	9.610990	9.613266	9.615532	16
15	594810	597158	599496	601823	604140	606446	608742	611028	613304	615570	15
30	594850	597197	599535	601862	604178	606484	608780	611066	613342	615608	14
45	594889	597236	599573	601900	604217	606523	608818	611104	613380	615645	13
42	9.594928	9.597275	9.599612	9.601939	9.604255	9.606561	9.608857	9.611142	9.613418	9.615683	12
15	594967	597314	599651	601978	604294	606599	608895	611180	613456	615721	11
30	595006	597353	599690	602016	604332	606638	608933	611218	613493	615758	10
45	595046	597392	599729	602055	604371	606676	608971	611256	613531	615796	9
43	9.595085	9.597432	9.599768	9.602094	9.604409	9.606714	9.609009	9.611294	9.613569	9.615834	8
15	595124	597471	599807	602132	604448	606753	609048	611332	613607	615872	7
30	595163	597510	599845	602171	604486	606791	609086	611370	613645	615909	6
45	595202	597549	599884	602210	604525	606829	609124	611408	613683	615947	5
44	9.595242	9.597588	9.599923	9.602248	9.604563	9.606868	9.609162	9.611446	9.613720	9.615984	4
15	595281	597627	599962	602287	604602	606906	609200	611484	613758	616022	3
30	595320	597666	600001	602326	604640	606944	609238	611522	613796	616060	2
45	595359	597705	600040	602364	604679	606983	609277	611560	613834	616097	1
45	9.595398	9.597744	9.600078	9.602403	9.604717	9.607021	9.609315	9.611598	9.613872	9.616135	0
	49 ^m	48 ^m	47 ^m	46 ^m	45 ^m	44 ^m	43 ^m	42 ^m	41 ^m	40 ^m	sec

Hours.

18 Hours.

5 Hours.

Log. Haverline. (6)

	20 ^m	21 ^m	22 ^m	23 ^m	24 ^m	25 ^m	26 ^m	27 ^m	28 ^m
	80 deg.				81 deg.				82 d
0°	0°	15'	30'	45'	0°	15'	30'	45'	0°
0 0	9.616135	9.618388	9.620632	9.622865	9.625089	9.627303	9.629507	9.631701	9.633886
1 15	616173	618426	620669	622902	625126	627339	629533	631738	633922
2 30	616210	618463	620706	622939	625163	627376	629580	631774	633958
3 45	616248	618501	620744	622977	625199	627413	629617	631811	633995
4 0	9.616286	9.618538	9.620781	9.623014	9.625237	9.627450	9.629653	9.631847	9.634031
5 15	616323	618576	620818	623051	625274	627487	629690	631884	634067
6 30	616361	618613	620856	623088	625311	627524	629727	631920	634104
7 45	616398	618650	620893	623125	625348	627561	629763	631956	634140
8 0	9.616436	9.618688	9.620930	9.623162	9.625385	9.627597	9.629800	9.631993	9.634176
9 15	616474	618725	620967	623199	625421	627634	629836	632029	634213
10 30	616511	618763	621005	623236	625458	627671	629873	632066	634249
11 45	616548	618800	621042	623274	625495	627707	629910	632102	634285
12 0	9.616586	9.618838	9.621079	9.623311	9.625532	9.627744	9.629946	9.632139	9.634322
13 15	616624	618875	621116	623348	625569	627781	629983	632175	634358
14 30	616662	618913	621154	623385	625606	627818	630020	632212	634394
15 45	616699	618950	621191	623422	625643	627855	630056	632248	634430
16 0	9.616737	9.618988	9.621228	9.623459	9.625680	9.627891	9.630093	9.632285	9.634467
17 15	616774	619025	621265	623496	625717	627928	630129	632321	634503
18 30	616812	619062	621303	623533	625754	627965	630166	632358	634539
19 45	616850	619100	621340	623570	625791	628002	630203	632394	634576
20 0	9.616887	9.619137	9.621377	9.623608	9.625828	9.628038	9.630239	9.632430	9.634612
21 15	616925	619175	621414	623645	625865	628075	630276	632467	634648
22 30	616962	619212	621452	623682	625902	628112	630312	632503	634684
23 45	617000	619249	621489	623719	625939	628149	630349	632540	634721
24 0	9.617038	9.619287	9.621526	9.623756	9.625976	9.628185	9.630386	9.632576	9.634757
25 15	617075	619324	621563	623793	626012	628222	630422	632613	634793
26 30	617113	619362	621601	623830	626049	628259	630459	632650	634830
27 45	617150	619399	621638	623867	626086	628296	630495	632685	634866
28 0	9.617188	9.619436	9.621675	9.623904	9.626123	9.628332	9.630532	9.632722	9.634902
29 15	617225	619474	621712	623941	626160	628369	630569	632759	634938
30 30	617263	619511	621750	623978	626197	628406	630605	632795	634975
31 45	617301	619549	621787	624015	626234	628443	630642	632831	635011
32 0	9.617338	9.619586	9.621824	9.624052	9.626271	9.628479	9.630678	9.632867	9.635047
33 15	617375	619623	621861	624089	626308	628516	630715	632904	635083
34 30	617413	619661	621899	624126	626345	628553	630751	632940	635120
35 45	617451	619698	621936	624163	626382	628590	630788	632977	635156
36 0	9.617488	9.619736	9.621973	9.624201	9.626418	9.628626	9.630825	9.633013	9.635192
37 15	617526	619773	622010	624238	626455	628663	630862	633049	635228
38 30	617563	619810	622047	624275	626492	628700	630898	633086	635265
39 45	617601	619848	622085	624312	626529	628736	630934	633122	635301
40 0	9.617638	9.619885	9.622122	9.624349	9.626566	9.628773	9.630971	9.633159	9.635337
41 15	617676	619922	622159	624386	626603	628810	631007	633195	635373
42 30	617713	619960	622196	624423	626640	628847	631044	633231	635409
43 45	617751	619997	622233	624460	626676	628883	631080	633268	635446
44 0	9.617788	9.620034	9.622271	9.624497	9.626713	9.628920	9.631117	9.633304	9.635482
45 15	617826	620072	622308	624534	626750	628957	631153	633341	635518
46 30	617863	620109	622345	624571	626787	628993	631190	633377	635554
47 45	617901	620146	622382	624608	626824	629030	631226	633413	635590
48 0	9.617938	9.620184	9.622419	9.624645	9.626861	9.629067	9.631263	9.633450	9.635627
49 15	617976	620221	622456	624682	626897	629103	631299	633486	635663
50 30	618013	620259	622494	624719	626934	629140	631336	633522	635699
51 45	618051	620296	622531	624756	626971	629177	631373	633559	635735
52 0	9.618088	9.620333	9.622568	9.624793	9.627008	9.629213	9.631409	9.633595	9.635771
53 15	618126	620370	622605	624830	627045	629250	631446	633631	635808
54 30	618163	620408	622642	624867	627082	629287	631482	633668	635844
55 45	618201	620445	622679	624904	627118	629323	631519	633704	635880
56 0	9.618238	9.620482	9.622717	9.624941	9.627155	9.629360	9.631555	9.633740	9.635916
57 15	618276	620520	622754	624978	627192	629397	631592	633777	635952
58 30	618313	620557	622791	625015	627229	629433	631628	633813	635989
59 45	618351	620594	622828	625052	627266	629470	631665	633849	636025
60 0	9.618388	9.620632	9.622865	9.625089	9.627303	9.629507	9.631701	9.633886	9.636061
	39 ^m	38 ^m	37 ^m	36 ^m	35 ^m	34 ^m	33 ^m	32 ^m	31 ^m

18 Hours

1000.

Log. Havensina. (1)

5 Hours.

30 ^m	31 ^m	32 ^m	33 ^m	34 ^m	35 ^m	36 ^m	37 ^m	38 ^m	39 ^m
82 deg.		83 deg.				84 deg.			
30'	45'	0'	15'	30'	45'	0'	15'	30'	45'
9.638227	9.640383	9.642529	9.644666	9.646794	9.648913	9.651022	9.653122	9.655213	9.657294
638263	640418	642565	644702	646829	648948	651057	653157	655247	657329
638299	640454	642601	644737	646865	648983	651092	653192	655282	657363
638335	640490	642636	644773	646900	649018	651127	653227	655317	657398
46'	1'	16'	31'	46'	1'	16'	31'	46'	1'
9.638371	9.640526	9.642672	9.644808	9.646936	9.649053	9.651162	9.653261	9.655352	9.657433
638407	640562	642708	644844	646971	649088	651197	653296	655387	657467
638443	640598	642743	644880	647006	649124	651232	653331	655421	657502
638479	640633	642779	644915	647042	649159	651267	653366	655456	657536
47'	2'	17'	32'	47'	2'	17'	32'	47'	2'
9.638515	9.640669	9.642815	9.644951	9.647077	9.649194	9.651302	9.653401	9.655491	9.657571
638551	640705	642850	644986	647112	649230	651337	653436	655525	657606
638587	640741	642886	645022	647148	649265	651372	653471	655560	657640
638622	640777	642922	645057	647183	649300	651407	653506	655593	657675
48'	3'	18'	33'	48'	3'	18'	33'	48'	3'
9.638658	9.640813	9.642957	9.645093	9.647219	9.649335	9.651443	9.653541	9.655630	9.657709
638694	640848	642993	645128	647254	649370	651478	653575	655664	657744
638730	640884	643029	645164	647289	649406	651513	653610	655699	657779
638766	640920	643064	645199	647325	649441	651548	653645	655734	657813
49'	4'	19'	34'	49'	4'	19'	34'	49'	4'
9.638802	9.640956	9.643100	9.645235	9.647360	9.649476	9.651583	9.653680	9.655769	9.657848
638838	640992	643136	645270	647395	649511	651618	653715	655803	657883
638874	641028	643171	645306	647431	649546	651653	653750	655838	657917
638910	641063	643207	645341	647466	649581	651688	653785	655873	657951
50'	5'	20'	35'	50'	5'	20'	35'	50'	5'
9.638946	9.641099	9.643243	9.645377	9.647501	9.649617	9.651723	9.653820	9.655907	9.657986
638982	641135	643278	645412	647537	649652	651758	653854	655942	658020
639018	641171	643314	645448	647572	649687	651793	653889	655977	658055
639054	641207	643349	645483	647607	649722	651828	653924	656011	658090
51'	6'	21'	36'	51'	6'	21'	36'	51'	6'
9.639090	9.641242	9.643385	9.645519	9.647643	9.649757	9.651863	9.653959	9.656046	9.658124
639126	641278	643421	645554	647678	649792	651898	653994	656081	658159
639162	641314	643456	645590	647713	649828	651933	654029	656116	658193
639198	641350	643492	645625	647749	649863	651968	654064	656150	658228
52'	7'	22'	37'	52'	7'	22'	37'	52'	7'
9.639234	9.641385	9.643528	9.645660	9.647784	9.649898	9.652003	9.654099	9.656185	9.658262
639270	641421	643563	645696	647819	649933	652038	654133	656220	658297
639306	641457	643599	645731	647855	649968	652073	654168	656254	658332
639342	641493	643635	645766	647890	650003	652108	654203	656288	658366
53'	8'	23'	38'	53'	8'	23'	38'	53'	8'
9.639378	9.641529	9.643670	9.645802	9.647925	9.650039	9.652143	9.654238	9.656324	9.658401
639414	641564	643706	645838	647960	650074	652178	654273	656358	658435
639449	641600	643741	645873	647996	650109	652213	654308	656393	658470
639485	641636	643777	645909	648031	650144	652248	654342	656428	658504
54'	9'	24'	39'	54'	9'	24'	39'	54'	9'
9.639521	9.641672	9.643813	9.645944	9.648066	9.650179	9.652283	9.654377	9.656463	9.658539
639557	641707	643848	645980	648101	650214	652318	654412	656497	658573
639593	641743	643884	646015	648137	650249	652353	654447	656532	658608
639629	641779	643919	646050	648172	650285	652388	654482	656567	658642
55'	10'	25'	40'	55'	10'	25'	40'	55'	10'
9.639665	9.641815	9.643955	9.646086	9.648207	9.650320	9.652423	9.654517	9.656601	9.658677
639701	641851	643991	646121	648243	650355	652458	654551	656636	658711
639737	641886	644026	646157	648278	650390	652493	654586	656671	658746
639773	641922	644062	646192	648313	650425	652528	654621	656705	658780
56'	11'	26'	41'	56'	11'	26'	41'	56'	11'
9.639809	9.641958	9.644097	9.646228	9.648349	9.650460	9.652563	9.654656	9.656740	9.658815
639844	641993	644133	646263	648384	650495	652598	654691	656775	658849
639880	642029	644168	646298	648419	650530	652633	654726	656809	658884
639916	642065	644204	646334	648454	650566	652667	654760	656844	658918
57'	12'	27'	42'	57'	12'	27'	42'	57'	12'
9.639952	9.642101	9.644240	9.646369	9.648490	9.650601	9.652702	9.654795	9.656879	9.658953
639988	642136	644275	646405	648525	650636	652737	654830	656913	658987
640024	642172	644311	646440	648560	650671	652772	654865	656948	659022
640060	642208	644346	646476	648595	650706	652807	654899	656982	659056
58'	13'	28'	43'	58'	13'	28'	43'	58'	13'
9.640096	9.642243	9.644382	9.646511	9.648631	9.650741	9.652842	9.654931	9.657017	9.659091
640131	642279	644421	646546	648666	650776	652877	654969	657052	659125
640167	642315	644453	646582	648701	650811	652912	655004	657086	659160
640203	642351	644489	646617	648736	650846	652947	655039	657121	659194
59'	14'	29'	44'	59'	14'	29'	44'	59'	14'
9.640239	9.642386	9.644524	9.646653	9.648772	9.650881	9.652982	9.655073	9.657156	9.659229
640275	642422	644560	646688	648807	650916	653017	655108	657190	659263
640311	642458	644595	646723	648842	650952	653052	655143	657225	659298
640347	642493	644631	646759	648877	650987	653087	655178	657259	659332
640383	9.642529	9.644666	9.646794	9.648913	9.651022	9.653122	9.655213	9.657294	9.659367
29 ^m	28 ^m	27 ^m	26 ^m	25 ^m	24 ^m	23 ^m	22 ^m	21 ^m	20 ^m

1000.

250

18 Hours.

	20 ^m	21 ^m	22 ^m	23 ^m	24 ^m	25 ^m		48 ^m	49 ^m
	80 deg.							87 deg.	
0	0	9.616133	9.618398	9.620632	9.622865	9.625088	139	9.673623	9.675824
1	15	616173	618426	620669	622902	6251	140	673657	675858
2	30	616210	618463	620706	622939	62	141	673690	675891
3	45	616248	618501	620744	622977	6	142	673723	675924
4	0	9.616286	9.618538	9.620781	9.623014	9	143	9.673757	9.675957
5	15	616323	618576	620818	623051		144	673790	675990
6	30	616361	618613	620856	623088		145	673824	676024
7	45	616398	618650	620893	623125		146	673857	676057
8	0	9.616436	9.618688	9.620930	9.623162		147	9.673890	9.676090
9	15	616474	618725	620967	62		148	673924	676124
10	30	616511	618763	621005	62		149	673957	676157
11	45	616548	618800	621042	62		150	673991	676190
12	0	9.616586	9.618838	9.621079	62		151	9.674024	9.676224
13	15	616624	618875	62111	62		152	674057	676257
14	30	616662	618913	62114	62		153	674091	676290
15	45	616699	618950	621	62		154	674124	676324
16	0	9.616737	9.618988	9.62109	62		155	9.674158	9.676358
17	15	616774	619025	62	62		156	674191	676391
18	30	616812	619062	62	62		157	674224	676424
19	45	616850	619100	62	62		158	674258	676458
20	0	9.616887	9.619133	9.62109	62		159	9.674291	9.676491
21	15	616925	61917	62	62		160	674325	676525
22	30	616962	6192	62	62		161	674358	676558
23	45	617000	619	62	62		162	674391	676591
24	0	9.617038	9.61913	9.62109	62		163	9.674425	9.676625
25	15	617075	61913	62	62		164	674458	676658
26	30	617113	61913	62	62		165	674491	676691
27	45	617150	61913	62	62		166	674525	676725
28	0	9.617188	9.61913	9.62109	62		167	9.674558	9.676758
29	15	61722	61913	62	62		168	674591	676791
30	30	61726	61913	62	62		169	674625	676825
31	45	6173	61913	62	62		170	674658	676858
32	0	9.617	9.61913	9.62109	62		171	9.674692	9.676892
33	15	61	61913	62	62		172	674725	676925
34	30	61	61913	62	62		173	674758	676958
35	45	6	61913	62	62		174	674792	676992
36	0	9.617	9.61913	9.62109	62		175	9.674825	9.677025
37	15	61	61913	62	62		176	674858	677058
38	30	61	61913	62	62		177	674892	677092
39	45	6	61913	62	62		178	674925	677125
40	0	9.617	9.61913	9.62109	62		179	9.674958	9.677158
41	15	61	61913	62	62		180	674992	677192
42	30	61	61913	62	62		181	675025	677225
43	45	6	61913	62	62		182	675058	677258
44	0	9.617	9.61913	9.62109	62		183	9.675092	9.677292
45	15	61	61913	62	62		184	675125	677325
46	30	61	61913	62	62		185	675158	677358
47	45	6	61913	62	62		186	675192	677392
48	0	9.617	9.61913	9.62109	62		187	9.675225	9.677425
49	15	61	61913	62	62		188	675258	677458
50	30	61	61913	62	62		189	675292	677492
51	45	6	61913	62	62		190	675325	677525
52	0	9.617	9.61913	9.62109	62		191	9.675358	9.677558
53	15	61	61913	62	62		192	675392	677592
54	30	61	61913	62	62		193	675425	677625
55	45	6	61913	62	62		194	675458	677658
56	0	9.617	9.61913	9.62109	62		195	9.675492	9.677692
57	15	61	61913	62	62		196	675525	677725
58	30	61	61913	62	62		197	675558	677758
59	45	6	61913	62	62		198	675592	677792
60	0	9.617	9.61913	9.62109	62		199	9.675625	9.677825
61	15	61	61913	62	62		200	675658	677858
62	30	61	61913	62	62		201	675692	677892
63	45	6	61913	62	62		202	675725	677925
64	0	9.617	9.61913	9.62109	62		203	9.675758	9.677958
65	15	61	61913	62	62		204	675792	677992
66	30	61	61913	62	62		205	675825	678025
67	45	6	61913	62	62		206	675858	678058
68	0	9.617	9.61913	9.62109	62		207	9.675892	9.678092
69	15	61	61913	62	62		208	675925	678125
70	30	61	61913	62	62		209	675958	678158
71	45	6	61913	62	62		210	675992	678192
72	0	9.617	9.61913	9.62109	62		211	9.676025	9.678225
73	15	61	61913	62	62		212	676058	678258
74	30	61	61913	62	62		213	676092	678292
75	45	6	61913	62	62		214	676125	678325
76	0	9.617	9.61913	9.62109	62		215	9.676158	9.678358
77	15	61	61913	62	62		216	676192	678392
78	30	61	61913	62	62		217	676225	678425
79	45	6	61913	62	62		218	676258	678458
80	0	9.617	9.61913	9.62109	62		219	9.676292	9.678492
81	15	61	61913	62	62		220	676325	678525
82	30	61	61913	62	62		221	676358	678558
83	45	6	61913	62	62		222	676392	678592
84	0	9.617	9.61913	9.62109	62		223	9.676425	9.678625
85	15	61	61913	62	62		224	676458	678658
86	30	61	61913	62	62		225	676492	678692
87	45	6	61913	62	62		226	676525	678725
88	0	9.617	9.61913	9.62109	62		227	9.676558	9.678758
89	15	61	61913	62	62		228	676592	678792
90	30	61	61913	62	62		229	676625	678825
91	45	6	61913	62	62		230	676658	678858
92	0	9.617	9.61913	9.62109	62		231	9.676692	9.678892
93	15	61	61913	62	62		232	676725	678925
94	30	61	61913	62	62		233	676758	678958
95	45	6	61913	62	62		234	676792	678992
96	0	9.617	9.61913	9.62109	62		235	9.676825	9.679025
97	15	61	61913	62	62		236	676858	679058
98	30	61	61913	62	62		237	676892	679092
99	45	6	61913	62	62		238	676925	679125
100	0	9.617	9.61913	9.62109	62		239	9.676958	9.679158
101	15	61	61913	62	62		240	676992	679192
102	30	61	61913	62	62		241	677025	679225
103	45	6	61913	62	62		242	677058	679258
104	0	9.617	9.61913	9.62109	62		243	9.677092	9.679292
105	15	61	61913	62	62		244	677125	679325
106	30	61	61913	62	62		245	677158	679358
107	45	6	61913	62	62		246	677192	679392
108	0	9.617	9.61913	9.62109	62		247	9.677225	9.679425
109	15	61	61913	62	62		248	677258	679458
110	30	61	61913	62	62		249	677292	679492
111	45	6	61913	62	62		250	677325	679525
112	0	9.617	9.61913	9.62109	62		251	9.677358	9.679558
113	15	61	61913	62	62		252	677392	679592
114	30	61	61913	62	62		253	677425	679625
115	45	6	61913	62	62		254	677458	679658
116	0	9.617	9.61913	9.62109	62		255	9.677492	9.679692
117	15	61	61913	62	62		256	677525	679725
118	30	61	61913	62	62		257	677558	679758
119	45	6	61913	62	62		258	677592	679792
120	0	9.617	9.61913	9.62109	62		259	9.677625	9.679825
121	15	61	61913	62	62		260	677658	679858
122	30	61	61913	62	62		261	677692	679892
123	45	6	61913	62	62		262	677725	679925
124	0	9.617	9.61913	9.62109	62		263	9.677758	9.679958
125	15	61	61913	62	62		264	677792	679992
126	30	61	61913	62	62		265	677825	680025
127	45	6	61913	62	62		266	677858	680058
128	0	9.617	9.61913	9.62109	62		267	9.677892	9.680092
129	15	61	61913	62	62		268	677925	680125
130	30	61	61913	62	62		269	677958	680158
131	45	6	61913	62	62		270	677992	680192
132	0	9.617	9.61913	9.62109	62		271	9.678025	9.680225
133	15	61	61913	62	62		2		

52 ^m	53 ^m	54 ^m	55 ^m	56 ^m	57 ^m	58 ^m	59 ^m	deg.
88 deg.				89 deg.				
	30'	45'	0'	15'	30'	45'		
60	9.687450	9.689391	9.691324	9.693248	9.695163	9.697071	60	
59	9.687482	9.689423	9.691356	9.693280	9.695195	9.697103	59	
58	9.687515	9.689456	9.691388	9.693312	9.695227	9.697134	58	
57	9.687547	9.689488	9.691420	9.693344	9.695259	9.697166	57	
56	9.687580	9.689520	9.691452	9.693376	9.695291	9.697198	56	
55	9.687612	9.689552	9.691484	9.693408	9.695323	9.697229	55	
54	9.687645	9.689585	9.691516	9.693440	9.695355	9.697261	54	
53	9.687677	9.689617	9.691548	9.693472	9.695387	9.697293	53	
52	9.687709	9.689649	9.691581	9.693504	9.695418	9.697325	52	
51	9.687742	9.689681	9.691613	9.693536	9.695450	9.697356	51	
50	9.687774	9.689714	9.691645	9.693568	9.695482	9.697388	50	
49	9.687806	9.689746	9.691677	9.693600	9.695514	9.697420	49	
48	9.687839	9.689778	9.691709	9.693632	9.695546	9.697451	48	
47	9.687871	9.689810	9.691741	9.693663	9.695577	9.697483	47	
46	9.687904	9.689843	9.691773	9.693695	9.695609	9.697515	46	
45	9.687936	9.689875	9.691805	9.693727	9.695641	9.697546	45	
44	9.687968	9.689907	9.691838	9.693759	9.695673	9.697578	44	
43	9.688001	9.689939	9.691870	9.693791	9.695705	9.697610	43	
42	9.688033	9.689972	9.691902	9.693823	9.695737	9.697641	42	
41	9.688066	9.690004	9.691934	9.693855	9.695769	9.697673	41	
40	9.688098	9.690036	9.691966	9.693887	9.695800	9.697705	40	
39	9.688130	9.690068	9.691998	9.693919	9.695832	9.697736	39	
38	9.688163	9.690101	9.692030	9.693951	9.695864	9.697768	38	
37	9.688195	9.690133	9.692062	9.693983	9.695896	9.697800	37	
36	9.688227	9.690165	9.692094	9.694015	9.695927	9.697832	36	
35	9.688260	9.690197	9.692126	9.694047	9.695959	9.697863	35	
34	9.688292	9.690230	9.692158	9.694079	9.695991	9.697895	34	
33	9.688325	9.690262	9.692190	9.694111	9.696023	9.697926	33	
32	9.688357	9.690294	9.692223	9.694143	9.696055	9.697958	32	
31	9.688389	9.690326	9.692255	9.694175	9.696086	9.697990	31	
30	9.688422	9.690358	9.692287	9.694207	9.696118	9.698021	30	
29	9.688454	9.690391	9.692319	9.694239	9.696150	9.698053	29	
28	9.688486	9.690423	9.692351	9.694271	9.696182	9.698085	28	
27	9.688519	9.690455	9.692383	9.694302	9.696214	9.698116	27	
26	9.688551	9.690487	9.692415	9.694334	9.696245	9.698148	26	
25	9.688583	9.690519	9.692447	9.694366	9.696277	9.698180	25	
24	9.688616	9.690552	9.692479	9.694398	9.696309	9.698211	24	
23	9.688648	9.690584	9.692511	9.694430	9.696341	9.698243	23	
22	9.688680	9.690616	9.692543	9.694462	9.696372	9.698275	22	
21	9.688713	9.690648	9.692575	9.694494	9.696404	9.698306	21	
20	9.688745	9.690680	9.692607	9.694526	9.696436	9.698338	20	
19	9.688777	9.690712	9.692639	9.694558	9.696468	9.698369	19	
18	9.688810	9.690745	9.692671	9.694590	9.696500	9.698401	18	
17	9.688843	9.690777	9.692703	9.694622	9.696531	9.698433	17	
16	9.688874	9.690809	9.692735	9.694653	9.696563	9.698464	16	
15	9.688907	9.690841	9.692767	9.694685	9.696595	9.698496	15	
14	9.688939	9.690873	9.692800	9.694717	9.696627	9.698528	14	
13	9.688971	9.690906	9.692831	9.694749	9.696658	9.698559	13	
12	9.689004	9.690938	9.692864	9.694781	9.696690	9.698591	12	
11	9.689036	9.690970	9.692896	9.694813	9.696722	9.698622	11	
10	9.689068	9.691002	9.692928	9.694845	9.696754	9.698654	10	
9	9.689100	9.691034	9.692960	9.694877	9.696785	9.698686	9	
8	9.689133	9.691066	9.692992	9.694909	9.696817	9.698717	8	
7	9.689165	9.691099	9.693024	9.694940	9.696849	9.698749	7	
6	9.689197	9.691131	9.693056	9.694972	9.696881	9.698780	6	
5	9.689230	9.691163	9.693088	9.695004	9.696912	9.698812	5	
4	9.689262	9.691195	9.693120	9.695036	9.696944	9.698844	4	
3	9.689294	9.691227	9.693152	9.695068	9.696976	9.698875	3	
2	9.689326	9.691259	9.693184	9.695100	9.697007	9.698907	2	
1	9.689359	9.691291	9.693216	9.695132	9.697039	9.698938	1	
0	9.689391	9.691324	9.693248	9.695163	9.697071	9.698970	0	
1 ^m	6 ^m	5 ^m	4 ^m	3 ^m	2 ^m	1 ^m	0 ^m	deg.

	20 ^m	21 ^m	22 ^m	23 ^m	24 ^m	25 ^m	26 ^m	27 ^m	28 ^m
	65 deg.				66 deg.				67 de
0	0' 9.460433	15' 9.463409	30' 9.466354	45' 9.469293	0' 9.472218	15' 9.475129	30' 9.478026	45' 9.480909	0' 9.483779
1	15' 460483	463450	466403	469341	15' 472266	475177	478074	480957	15' 483827
2	30' 460532	463499	466452	469390	30' 472315	475225	478122	481005	30' 483874
3	45' 460582	463548	466501	469439	45' 472363	475274	478170	481053	45' 483922
4	0' 9.460631	15' 9.463598	30' 9.466550	45' 9.469488	0' 9.472412	15' 9.475322	30' 9.478218	45' 9.481101	0' 9.483970
5	15' 460681	463647	466599	469537	15' 472461	475371	478267	481149	15' 484018
6	30' 460730	463696	466648	469586	30' 472509	475419	478315	481197	30' 484065
7	45' 460780	463746	466697	469634	45' 472558	475467	478363	481245	45' 484113
8	0' 9.460830	15' 9.463795	30' 9.466746	45' 9.469683	0' 9.472606	15' 9.475516	30' 9.478411	45' 9.481293	0' 9.484161
9	15' 460879	463844	466793	469732	15' 472655	475564	478459	481341	15' 484208
10	30' 460929	463894	466844	469781	30' 472704	475612	478507	481388	30' 484256
11	45' 460978	463943	466893	469830	45' 472752	475661	478555	481436	45' 484304
12	0' 9.461028	15' 9.463992	30' 9.466942	45' 9.469879	0' 9.472801	15' 9.475709	30' 9.478604	45' 9.481484	0' 9.484351
13	15' 461077	464041	466991	469927	15' 472849	475757	478652	481532	15' 484399
14	30' 461127	464091	467041	469976	30' 472898	475806	478700	481580	30' 484447
15	45' 461176	464140	467090	470025	45' 472947	475854	478748	481628	45' 484494
16	0' 9.461226	15' 9.464189	30' 9.467139	45' 9.470074	0' 9.472995	15' 9.475903	30' 9.478796	45' 9.481676	0' 9.484542
17	15' 461275	464238	467188	470123	15' 473044	475951	478844	481724	15' 484590
18	30' 461325	464288	467237	470172	30' 473092	475999	478892	481772	30' 484637
19	45' 461374	464337	467286	470220	45' 473141	476047	478940	481819	45' 484685
20	0' 9.461424	15' 9.464386	30' 9.467335	45' 9.470269	0' 9.473189	15' 9.476096	30' 9.478988	45' 9.481867	0' 9.484733
21	15' 461473	464436	467384	470318	15' 473238	476144	479037	481915	15' 484780
22	30' 461523	464485	467433	470367	30' 473287	476192	479085	481963	30' 484828
23	45' 461572	464534	467482	470415	45' 473335	476241	479133	482011	45' 484875
24	0' 9.461622	15' 9.464583	30' 9.467531	45' 9.470464	0' 9.473384	15' 9.476289	30' 9.479181	45' 9.482059	0' 9.484923
25	15' 461671	464633	467580	470513	15' 473432	476337	479229	482107	15' 484971
26	30' 461721	464682	467629	470562	30' 473481	476386	479277	482154	30' 485018
27	45' 461770	464731	467678	470610	45' 473529	476434	479325	482202	45' 485066
28	0' 9.461820	15' 9.464780	30' 9.467727	45' 9.470659	0' 9.473578	15' 9.476482	30' 9.479373	45' 9.482250	0' 9.485114
29	15' 461869	464829	467776	470708	15' 473626	476531	479421	482298	15' 485162
30	30' 461919	464879	467825	470757	30' 473675	476579	479469	482346	30' 485209
31	45' 461968	464928	467874	470805	45' 473723	476627	479517	482394	45' 485256
32	0' 9.462017	15' 9.464977	30' 9.467923	45' 9.470854	0' 9.473772	15' 9.476675	30' 9.479565	45' 9.482441	0' 9.485304
33	15' 462067	465026	467972	470903	15' 473820	476724	479613	482489	15' 485352
34	30' 462116	465076	468021	470952	30' 473869	476772	479661	482537	30' 485399
35	45' 462166	465125	468070	471000	45' 473917	476820	479709	482585	45' 485447
36	0' 9.462215	15' 9.465174	30' 9.468119	45' 9.471049	0' 9.473966	15' 9.476869	30' 9.479757	45' 9.482633	0' 9.485494
37	15' 462265	465223	468168	471098	15' 474014	476917	479806	482681	15' 485542
38	30' 462314	465272	468217	471147	30' 474063	476965	479854	482728	30' 485589
39	45' 462363	465321	468265	471195	45' 474111	477013	479902	482776	45' 485637
40	0' 9.462413	15' 9.465371	30' 9.468314	45' 9.471244	0' 9.474160	15' 9.477062	30' 9.479950	45' 9.482824	0' 9.485685
41	15' 462462	465420	468363	471293	15' 474208	477110	479998	482872	15' 485732
42	30' 462512	465469	468412	471342	30' 474257	477158	480046	482919	30' 485780
43	45' 462561	465518	468462	471390	45' 474305	477206	480094	482967	45' 485827
44	0' 9.462611	15' 9.465567	30' 9.468510	45' 9.471439	0' 9.474354	15' 9.477255	30' 9.480142	45' 9.483015	0' 9.485875
45	15' 462660	465617	468559	471488	15' 474402	477303	480190	483063	15' 485922
46	30' 462709	465666	468608	471536	30' 474451	477351	480238	483111	30' 485971
47	45' 462759	465715	468657	471585	45' 474499	477399	480286	483158	45' 486017
48	0' 9.462808	15' 9.465764	30' 9.468706	45' 9.471634	0' 9.474547	15' 9.477447	30' 9.480334	45' 9.483206	0' 9.486065
49	15' 462857	465813	468755	471682	15' 474596	477496	480382	483254	15' 486113
50	30' 462907	465862	468804	471731	30' 474644	477544	480430	483302	30' 486160
51	45' 462956	465911	468853	471780	45' 474693	477592	480478	483349	45' 486208
52	0' 9.463006	15' 9.465961	30' 9.468901	45' 9.471828	0' 9.474741	15' 9.477640	30' 9.480526	45' 9.483397	0' 9.486255
53	15' 463055	466010	468950	471877	15' 474790	477688	480574	483445	15' 486303
54	30' 463104	466059	468999	471926	30' 474838	477737	480621	483493	30' 486350
55	45' 463154	466108	469048	471974	45' 474886	477785	480669	483540	45' 486398
56	0' 9.463203	15' 9.466157	30' 9.469097	45' 9.472023	0' 9.474935	15' 9.477783	30' 9.480717	45' 9.483588	0' 9.486445
57	15' 463252	466206	469146	472072	15' 474983	477831	480765	483636	15' 486493
58	30' 463302	466255	469195	472120	30' 475032	477879	480813	483684	30' 486540
59	45' 463351	466304	469244	472169	45' 475080	477928	480861	483731	45' 486588
60	0' 9.463400	15' 9.466354	30' 9.469293	45' 9.472218	0' 9.475129	15' 9.478026	30' 9.480909	45' 9.483779	0' 9.486635
61	15' 463450	466403	469341	472266	15' 475177	478074	480957	483827	15' 486683
62	30' 463499	466452	469390	472315	30' 475225	478122	481005	483874	30' 486731
63	45' 463548	466501	469439	472363	45' 475274	478170	481053	483922	45' 486779
64	0' 9.463598	15' 9.466550	30' 9.469488	45' 9.472412	0' 9.475322	15' 9.478218	30' 9.481101	45' 9.483970	0' 9.486827
65	15' 463647	466599	469537	472461	15' 475371	478267	481149	484018	15' 486875
66	30' 463696	466648	469586	472509	30' 475419	478315	481197	484065	30' 486923
67	45' 463746	466697	469634	472558	45' 475467	478363	481245	484113	45' 486971
68	0' 9.463795	15' 9.466746	30' 9.469683	45' 9.472606	0' 9.475516	15' 9.478411	30' 9.481293	45' 9.484161	0' 9.487020
69	15' 463844	466793	469732	472655	15' 475564	478459	481341	484208	15' 487068
70	30' 463894	466844	469781	472704	30' 475612	478507	481388	484256	30' 487116
71	45' 463943	466893	469830	472752	45' 475661	478555	481436	484304	45' 487164
72	0' 9.463992	15' 9.466942	30' 9.469879	45' 9.472801	0' 9.475709	15' 9.478604	30' 9.481484	45' 9.484351	0' 9.487212
73	15' 464041	466991	469927	472849	15' 475757	478652	481532	484399	15' 487260
74	30' 464091	467041	469976	472898	30' 475806	478700	481580	484447	30' 487308
75	45' 464140	467090	470025	472947	45' 475854	478748	481628	484494	45' 487356
76	0' 9.464189	15' 9.467139	30' 9.470074	45' 9.472995	0' 9.475903	15' 9.478796	30' 9.481676	45' 9.484542	0' 9.487404
77	15' 464238	467188	470123	473044	15' 475951	478844	481724	484590	15' 487452
78	30' 464288	467237	470172	473092	30' 476047	478892	481772	484637	30' 487499
79	45' 464337	467286	470220	473141	45' 476096	478940	481819	484685	45' 487547
80	0' 9.464386	15' 9.467335	30' 9.470269	45' 9.473189	0' 9.476096	15' 9.478988	30' 9.481867	45' 9.484733	0' 9.487593
81	15' 464436	467384	470318	473238	15' 476144	479037	481915	484780	15' 487641
82	30' 464485	467433	470367	473287	30' 476192	479085	481963	484828	30' 487689
83	45' 464534	467482	470415	473335	45' 476241	479133	482011	484875	45' 487737
84	0' 9.464583	15' 9.467531	30' 9.470464	45' 9.473384	0' 9.476289	15' 9.479181	30' 9.482059	45' 9.484923	0' 9.487785
85	15' 464633	467580	470513	473432	15' 476337	479229	482107	484971	15' 487833
86	30' 464682	467629	470562	473481	30' 476386	479277	482154	485018	30' 487881
87	45' 464731	467678	470610	473529	45' 476434	479325	482202	485066	45' 487929
88	0' 9.464780	15' 9.467727	30' 9.470659	45' 9.473578	0' 9.476482	15' 9.479373	30' 9.482250	45' 9.485114	0' 9.487977
89	15' 464829	467776	470708	473626	15' 476531	479421	482298	485162	

30 ^m	31 ^m	32 ^m	33 ^m	34 ^m	35 ^m	36 ^m	37 ^m	38 ^m	39 ^m	
67 deg.		68 deg.				69 deg.				
30°	45'	0'	15'	30'	45'	0'	15'	30'	45'	sec
9.489478	9.492307	9.495123	9.497926	9.500716	9.503492	9.506256	9.509007	9.511745	9.514470	60
489525	492354	495170	497975	500752	503538	506302	509053	511790	514515	59
489572	492401	495217	498019	500809	503585	506348	509098	511836	514561	58
489620	492448	495264	498066	500855	503631	506394	509144	511881	514606	57
31°	46'	1'	16'	31'	46'	1'	16'	31'	46'	
9.489667	9.492495	9.495311	9.498112	9.500901	9.503677	9.506440	9.509190	9.511927	9.514651	56
489714	492542	495357	498159	500948	503723	506486	509235	511972	514697	55
489761	492589	495404	498206	500994	503769	506532	509281	512018	514742	54
489809	492636	495451	498252	501040	503815	506578	509327	512063	514787	53
32°	47'	2'	17'	32'	47'	2'	17'	32'	47'	
9.489856	9.492684	9.495498	9.498299	9.501087	9.503862	9.506624	9.509373	9.512109	9.514832	52
489903	492730	495544	498346	501133	503908	506669	509418	512154	514878	51
489950	492778	495591	498392	501179	503954	506715	509464	512200	514923	50
489998	492824	495638	498438	501226	504000	506761	509510	512245	514968	49
33°	48'	3'	18'	33'	48'	3'	18'	33'	48'	
9.490045	9.492872	9.495685	9.498485	9.501272	9.504046	9.506807	9.509555	9.512291	9.515014	48
490092	492918	495732	498532	501318	504092	506853	509601	512336	515059	47
490139	492966	495778	498578	501365	504138	506899	509647	512382	515104	46
490186	493012	495825	498625	501411	504184	506945	509692	512427	515149	45
34°	49'	4'	19'	34'	49'	4'	19'	34'	49'	
9.490234	9.493060	9.495872	9.498671	9.501457	9.504231	9.506991	9.509738	9.512473	9.515193	44
490281	493106	495919	498718	501504	504277	507037	509784	512518	515240	43
490328	493153	495966	498764	501550	504323	507083	509830	512564	515285	42
490375	493200	496012	498811	501596	504369	507128	509875	512609	515330	41
35°	50'	5'	20'	35'	50'	5'	20'	35'	50'	
9.490423	9.493247	9.496059	9.498857	9.501643	9.504415	9.507174	9.509921	9.512655	9.515376	40
490470	493294	496106	498904	501689	504461	507220	509967	512700	515421	39
490517	493341	496153	498951	501735	504507	507266	510012	512746	515466	38
490564	493388	496199	498997	501782	504553	507312	510058	512791	515511	37
36°	51'	6'	21'	36'	51'	6'	21'	36'	51'	
9.490611	9.493435	9.496246	9.499044	9.501828	9.504599	9.507358	9.510104	9.512836	9.515557	36
490658	493482	496293	499090	501874	504645	507404	510149	512882	515602	35
490706	493529	496339	499137	501921	504692	507450	510195	512927	515647	34
490753	493576	496386	499183	501967	504738	507495	510240	512973	515692	33
37°	52'	7'	22'	37'	52'	7'	22'	37'	52'	
9.490800	9.493623	9.496433	9.499230	9.502013	9.504784	9.507541	9.510286	9.513018	9.515737	32
490847	493670	496480	499276	502059	504830	507587	510332	513064	515783	31
490894	493717	496526	499323	502106	504876	507633	510377	513109	515828	30
490941	493764	496573	499369	502152	504922	507679	510423	513154	515873	29
38°	53'	8'	23'	38'	53'	8'	23'	38'	53'	
9.490989	9.493811	9.496620	9.499416	9.502198	9.504968	9.507725	9.510469	9.513200	9.515918	28
491036	493858	496666	499462	502244	505014	507771	510514	513245	515963	27
491083	493905	496713	499509	502291	505060	507816	510560	513291	516009	26
491130	493951	496760	499555	502337	505106	507862	510605	513336	516054	25
39°	54'	9'	24'	39'	54'	9'	24'	39'	54'	
9.491177	9.493998	9.496807	9.499601	9.502383	9.505152	9.507908	9.510651	9.513381	9.516099	24
491224	494045	496853	499648	502429	505198	507954	510697	513427	516144	23
491271	494092	496900	499694	502476	505244	508000	510742	513472	516189	22
491318	494139	496947	499741	502522	505290	508045	510788	513518	516235	21
40°	55'	10'	25'	40'	55'	10'	25'	40'	55'	
9.491366	9.494186	9.496993	9.499787	9.502568	9.505336	9.508091	9.510834	9.513563	9.516280	20
491413	494233	497040	499834	502614	505382	508137	510879	513608	516325	19
491460	494280	497087	499880	502661	505428	508183	510925	513654	516370	18
491507	494327	497133	499927	502707	505474	508229	510970	513699	516415	17
41°	56'	11'	26'	41'	56'	11'	26'	41'	56'	
9.491554	9.494374	9.497180	9.499973	9.502753	9.505520	9.508275	9.511016	9.513745	9.516460	16
491601	494420	497227	500019	502799	505566	508320	511061	513790	516506	15
491648	494467	497273	500066	502846	505612	508366	511107	513835	516551	14
491695	494514	497320	500112	502892	505658	508412	511153	513881	516596	13
42°	57'	12'	27'	42'	57'	12'	27'	42'	57'	
9.491742	9.494561	9.497367	9.500159	9.502938	9.505704	9.508458	9.511198	9.513926	9.516641	12
491789	494608	497413	500205	502984	505750	508503	511244	513971	516686	11
491837	494655	497460	500252	503031	505796	508549	511289	514017	516731	10
491884	494702	497516	500298	503077	505842	508595	511335	514062	516777	9
43°	58'	13'	28'	43'	58'	13'	28'	43'	58'	
9.491931	9.494749	9.497553	9.500345	9.503123	9.505888	9.508641	9.511380	9.514107	9.516822	8
491978	494795	497500	500391	503169	505934	508687	511424	514153	516867	7
492025	494842	497546	500437	503215	505980	508732	511472	514198	516912	6
492072	494889	497593	500484	503261	506026	508778	511517	514243	516957	5
44°	59'	14'	29'	44'	59'	14'	29'	44'	59'	
9.492119	9.494936	9.497740	9.500530	9.503308	9.506072	9.508824	9.511563	9.514289	9.517002	4
492166	494983	497786	500577	503354	506118	508870	511608	514334	517047	3
492213	495030	497833	500623	503400	506164	508915	511654	514379	517092	2
492260	495076	497879	500669	503446	506210	508961	511699	514425	517137	1
9.492307	9.495123	9.497926	9.500716	9.503492	9.506256	9.509007	9.511745	9.514470	9.517183	0
29 ^m	28 ^m	27 ^m	26 ^m	25 ^m	24 ^m	23 ^m	22 ^m	21 ^m	20 ^m	sec

	40°		41°		42°		43°		44°		45°		46°		47°		48°																																					
	70 deg.																		71 deg.																		72 deg.																	
0'	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'																																				
0	9.517183	9.519883	9.522570	9.525245	9.527908	9.530559	9.533197	9.535823	9.538437	9.541039	9.543630	9.546209	9.548776	9.551331	9.553875	9.556407	9.558928	9.561437																																				
1	517228	519928	522615	525290	527952	530603	533241	535867	538481	541083	543674	546253	548820	551375	553919	556451	558972	561481																																				
2	517273	519972	522660	525334	527997	530647	533285	535911	538524	541125	543714	546292	548859	551415	553960	556493	559015	561525																																				
3	517318	520017	522704	525379	528041	530691	533328	535954	538568	541169	543757	546334	548901	551457	554002	556535	559058	561568																																				
4	9.517363	9.520062	9.522749	9.525423	9.528085	9.530735	9.533372	9.535998	9.538611	9.541213	9.543804	9.546384	9.548953	9.551511	9.554059	9.556596	9.559123	9.561639																																				
5	517408	520107	522794	525468	528129	530779	533416	536041	538655	541257	543845	546422	549029	551585	554131	556667	559193	561709																																				
6	517453	520152	522838	525512	528174	530823	533460	536085	538698	541299	543886	546462	549071	551627	554173	556709	559235	561751																																				
7	517498	520197	522883	525557	528218	530867	533504	536129	538741	541342	543928	546504	549071	551627	554173	556709	559235	561751																																				
8	9.517543	9.520242	9.522928	9.525601	9.528262	9.530911	9.533548	9.536172	9.538785	9.541387	9.543978	9.546558	9.549127	9.551685	9.554233	9.556771	9.559299	9.561815																																				
9	517588	520287	522972	525645	528306	530955	533592	536216	538828	541429	544016	546592	549169	551735	554291	556837	559373	561889																																				
10	517633	520331	523017	525690	528351	530999	533635	536260	538872	541473	544059	546635	549212	551778	554334	556880	559416	561932																																				
11	517679	520376	523062	525734	528395	531043	533679	536303	538915	541516	544092	546668	549245	551811	554367	556913	559449	561965																																				
12	9.517724	9.520421	9.523106	9.525779	9.528439	9.531087	9.533723	9.536347	9.538959	9.541561	9.544153	9.546735	9.549307	9.551869	9.554421	9.556963	9.559495	9.562017																																				
13	517769	520466	523151	525823	528483	531131	533767	536391	539003	541604	544180	546756	549333	551909	554475	557031	559577	562103																																				
14	517814	520511	523195	525868	528528	531175	533811	536434	539046	541647	544223	546799	549376	551952	554518	557074	559620	562136																																				
15	517859	520556	523240	525912	528572	531219	533855	536478	539089	541690	544266	546842	549419	551995	554561	557117	559663	562179																																				
16	9.517904	9.520601	9.523285	9.525957	9.528616	9.531263	9.533898	9.536521	9.539132	9.541734	9.544325	9.546906	9.549487	9.552058	9.554619	9.557170	9.559721	9.562262																																				
17	517949	520645	523329	526001	528660	531307	533942	536565	539176	541777	544353	546929	549506	552082	554648	557204	559750	562266																																				
18	517994	520690	523374	526045	528705	531351	533986	536609	539219	541820	544396	546972	549549	552125	554691	557247	559793	562309																																				
19	518039	520735	523419	526089	528749	531395	534030	536652	539263	541864	544440	547016	549593	552169	554725	557281	559827	562343																																				
20	9.518084	9.520780	9.523463	9.526134	9.528793	9.531439	9.534074	9.536696	9.539306	9.541907	9.544498	9.547080	9.549661	9.552232	9.554803	9.557364	9.559925	9.562476																																				
21	518129	520825	523508	526179	528837	531483	534117	536739	539349	541950	544536	547112	549689	552265	554831	557387	559933	562449																																				
22	518174	520870	523552	526223	528881	531527	534161	536783	539393	541994	544580	547156	549733	552309	554875	557431	559977	562493																																				
23	518219	520914	523597	526267	528926	531571	534205	536827	539436	542037	544613	547189	549766	552342	554908	557464	559999	562525																																				
24	9.518264	9.520959	9.523642	9.526312	9.528970	9.531615	9.534249	9.536870	9.539480	9.542081	9.544672	9.547253	9.549834	9.552415	9.554986	9.557547	9.560108	9.562659																																				
25	518309	521004	523686	526356	529014	531659	534293	536914	539525	542126	544702	547278	549855	552431	554997	557553	560109	562635																																				
26	518354	521049	523731	526401	529058	531703	534336	536957	539568	542169	544745	547321	549898	552474	555040	557596	560152	562678																																				
27	518399	521094	523775	526445	529102	531747	534380	536991	539592	542193	544769	547345	549922	552498	555064	557620	560176	562702																																				
28	9.518444	9.521138	9.523820	9.526489	9.529147	9.531791	9.534424	9.537045	9.539656	9.542257	9.544848	9.547429	9.549990	9.552551	9.555112	9.557673	9.560224	9.562775																																				
29	518489	521183	523865	526534	529191	531835	534468	537089	539699	542300	544881	547452	549993	552554	555115	557676	560237	9.562763																																				
30	518534	521228	523909	526578	529235	531879	534512	537131	539732	542333	544914	547485	549996	552557	555118	557679	560240	9.562763																																				
31	518579	521273	523954	526623	529279	531923	534555	537175	539776	542377	544958	547519	549990	552551	555112	557673	560234	9.562763																																				
32	9.518624	9.521318	9.523998	9.526667	9.529323	9.531967	9.534599	9.537219	9.539820	9.542421	9.545012	9.547593	9.550174	9.552755	9.555336	9.557917	9.560498	9.563069																																				
33	518669	521362	524043	526711	529367	532011	534643	537264	539875	542476	545067	547648	549999	552550	555101	557652	560203	9.563069																																				
34	518714	521407	524088	526756	529412	532055	534687	537308	539919	542520	545111	547692	549993	552544	555095	557646	560197	9.563069																																				
35	518759	521452	524132	526800	529456	532099	534730	537351	539952	542553	545144	547725	549996	552547	555098	557649	560200	9.563069																																				
36	9.518804	9.521497	9.524177	9.526844	9.529500	9.532143	9.534774	9.537395	9.540006	9.542607	9.545198	9.547779	9.550360	9.552941	9.555522	9.558103	9.560684	9.563245																																				
37	518849	521541	524221	526889	529544	532187	534818	537439	540040	542641	545232	547813	549994	552545	555096	557647	560198	9.563245																																				
38	518894	521586	524266	526933	529588	532231	534862	537483	540084	542685	545276	547857	549998	552549	555100	557651	560202	9.563245																																				
39	518939	521631	524310	526977	529632	532275	534905	537526	540127	542728	545319	547900	549991	552542	555093	557644	560195	9.563245																																				
40	9.518984	9.521676	9.524355	9.527022	9.529676	9.532319	9.534949	9.537567	9.540178	9.542789	9.545390	9.547981	9.550572	9.553163	9.555754	9.558329	9.560890	9.563431																																				
41	519029	521720	524399	527066	529721	532363	534993	537614	540215	542816	545407	547988	549999	552550	555101	557652	560203	9.563431																																				
42	519074	521765	524444	527111	529765	532407	535037	537658	540259	542860	545451	548032	549993	552544	555095	557646	560197	9.563431																																				
43	519119	521810	524489	527155	529809	532451	535080	537691	540292	542893	545484	548065	549996	552547	555098	557649	560200	9.563431																																				
44	9.519164	9.521855	9.524533	9.527199	9.529853	9.532495	9.535124	9.537741	9.540342	9.542933	9.545514	9.548085	9.550646	9.553207	9.555768	9.558329	9.560890	9.563431																																				
45	519209	521899	524578	527243	529897	532539	535168	537785	540396	542997	545588	548169	549990	552541	555092	557643	560194	9.563431																																				
46	519254	521944	524622	527288	529941	532582	535211	537828	540439	543040	545631	548212	549993	552544	555095	557646	560197	9.563431																																				
47	519299	521989	524667	527332	529985	532626	535255	537872	540473	543074	545665	548246	549997	552548	555099	557650	560201	9.563431																																				
48	9.519344	9.522034	9.524711	9.527376	9.530029	9.532670	9.535299	9.537915	9.540526	9.543137	9.545748	9.548349	9.550950	9.553551	9.556152	9.558753	9.561354	9.563935																																				
49	519389	522078	524756	527421	530074	532>																																																

50 ^m	51 ^m	52 ^m	53 ^m	54 ^m	55 ^m	56 ^m	57 ^m	58 ^m	59 ^m	
72 deg.	73 deg.				74 deg.					
45°	0°	15°	30°	45°	0°	15°	30°	45°		
543630	546208	548775	551330	553874	556406	558926	561435	563933	566419	60
543673	546251	548818	551373	553916	556448	558968	561477	563974	566460	59
543716	546294	548861	551415	553958	556490	559010	561518	564016	566502	58
543759	546337	548903	551458	554001	556532	559052	561560	564057	566543	57
46°	1°	16°	31°	46°	1°	16°	31°	46°		
543802	546380	548946	551500	554043	556574	559094	561602	564099	566584	56
543845	546423	548989	551543	554085	556616	559136	561644	564140	566626	55
543888	546466	549031	551585	554127	556658	559177	561685	564182	566667	54
543931	546508	549074	551628	554170	556700	559219	561727	564223	566708	53
47°	2°	17°	32°	47°	2°	17°	32°	47°		
543974	546551	549117	551670	554212	556742	559261	561769	564265	566750	52
544017	546594	549159	551712	554254	556784	559303	561810	564306	566791	51
544061	546637	549202	551755	554297	556826	559345	561852	564348	566832	50
544103	546680	549244	551797	554339	556869	559387	561894	564389	566874	49
48°	3°	18°	33°	48°	3°	18°	33°	48°		
544147	546723	549287	551840	554381	556911	559429	561935	564431	566915	48
544190	546766	549330	551882	554423	556953	559471	561977	564472	566956	47
544233	546808	549372	551925	554466	556995	559513	562019	564514	566998	46
544276	546851	549415	551967	554507	557037	559554	562061	564555	567039	45
49°	4°	19°	34°	49°	4°	19°	34°	49°		
544319	546894	549458	552010	554550	557079	559596	562102	564597	567080	44
544362	546937	549500	552052	554592	557121	559638	562144	564638	567121	43
544405	546980	549543	552095	554635	557163	559680	562186	564680	567163	42
544448	547022	549586	552137	554677	557205	559722	562227	564721	567204	41
50°	5°	20°	35°	50°	5°	20°	35°	50°		
544491	547065	549628	552179	554719	557247	559764	562269	564763	567245	40
544534	547108	549671	552222	554761	557289	559805	562311	564804	567287	39
544577	547151	549713	552264	554803	557331	559847	562352	564846	567328	38
544620	547194	549756	552307	554846	557373	559889	562394	564887	567369	37
51°	6°	21°	36°	51°	6°	21°	36°	51°		
544663	547237	549799	552349	554888	557415	559931	562435	564929	567411	36
544706	547279	549841	552391	554930	557457	559973	562477	564970	567452	35
544749	547322	549884	552434	554972	557499	560015	562519	565012	567493	34
544792	547365	549927	552476	555014	557541	560057	562560	565053	567534	33
52°	7°	22°	37°	52°	7°	22°	37°	52°		
544835	547408	549969	552519	555057	557583	560098	562602	565094	567576	32
544878	547450	550012	552561	555099	557625	560140	562644	565136	567617	31
544921	547493	550054	552603	555141	557667	560182	562685	565177	567658	30
544964	547536	550097	552646	555183	557709	560224	562727	565219	567699	29
53°	8°	23°	38°	53°	8°	23°	38°	53°		
545007	547579	550139	552688	555226	557751	560266	562769	565256	567741	28
545050	547622	550182	552731	555268	557793	560307	562810	565302	567782	27
545093	547664	550224	552773	555310	557835	560349	562852	565343	567823	26
545135	547707	550267	552815	555352	557877	560391	562893	565384	567864	25
54°	9°	24°	39°	54°	9°	24°	39°	54°		
545178	547750	550310	552858	555394	557919	560433	562935	565426	567906	24
545221	547793	550352	552900	555436	557961	560475	562977	565467	567947	23
545264	547835	550395	552942	555479	558003	560516	563018	565509	567988	22
545307	547878	550437	552985	555521	558045	560558	563060	565550	568029	21
55°	10°	25°	40°	55°	10°	25°	40°	55°		
545350	547921	550480	553027	555563	558087	560600	563101	565592	568070	20
545393	547964	550522	553070	555605	558129	560642	563143	565633	568112	19
545436	548006	550565	553112	555647	558171	560684	563185	565674	568153	18
545479	548049	550607	553154	555689	558213	560725	563226	565716	568194	17
56°	11°	26°	41°	56°	11°	26°	41°	56°		
545522	548092	550650	553197	555732	558255	560767	563268	565757	568235	16
545565	548135	550693	553239	555774	558297	560809	563309	565798	568276	15
545608	548177	550735	553281	555816	558339	560851	563351	565840	568318	14
545651	548220	550778	553324	555858	558381	560892	563392	565881	568359	13
57°	12°	27°	42°	57°	12°	27°	42°	57°		
545694	548263	550820	553366	555900	558423	560934	563434	565923	568400	12
545737	548305	550863	553408	555942	558465	560976	563476	565964	568441	11
545780	548348	550905	553451	555984	558507	561018	563517	566005	568483	10
545822	548391	550948	553493	556027	558549	561059	563559	566047	568524	9
58°	13°	28°	43°	58°	13°	28°	43°	58°		
545865	548434	550990	553535	556069	558591	561101	563600	566088	568565	8
545908	548476	551033	553578	556111	558633	561143	563642	566130	568606	7
545951	548519	551075	553620	556153	558675	561185	563683	566171	568647	6
545994	548562	551118	553662	556195	558716	561226	563725	566212	568688	5
59°	14°	29°	44°	59°	14°	29°	44°	59°		
546037	548604	551160	553705	556237	558758	561268	563767	566254	568730	4
546080	548647	551203	553747	556279	558800	561310	563808	566295	568771	3
546123	548690	551245	553789	556321	558842	561352	563850	566336	568812	2
546166	548732	551288	553831	556364	558884	561393	563891	566378	568853	1
546208	548775	551330	553874	556406	558926	561435	563933	566419	568894	0
9 ^m	8 ^m	7 ^m	6 ^m	5 ^m	4 ^m	3 ^m	2 ^m	1 ^m	0 ^m	

sec	75 deg.				76 deg.			
	0 ^m	1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m
0	0°	15'	30'	45'	0°	15'	30'	45'
1	568894	571358	573911	576253	578684	581104	583513	585911
15	568935	571399	573852	576294	578724	581144	583553	585951
30	568977	571440	573893	576334	578765	581184	583593	585991
45	569018	571481	573933	576375	578805	581225	583633	586031
1	1'	16'	31'	46'	1'	16'	31'	46'
4	0 569059	571522	573974	576415	578846	581265	583673	586071
5	569100	571563	574015	576456	578886	581305	583713	586111
6	569141	571604	574056	576497	578926	581345	583753	586151
7	569182	571645	574097	576537	578967	581386	583793	586191
8	0 569223	571686	574137	576578	579007	581426	583834	586230
9	569265	571727	574178	576618	579048	581466	583873	586270
10	569306	571768	574219	576659	579088	581506	583914	586310
11	569347	571809	574260	576699	579128	581546	583954	586350
12	0 569388	571850	574300	576740	579169	581587	583994	586390
13	569429	571891	574341	576781	579209	581627	584034	586430
14	569470	571932	574382	576821	579250	581667	584074	586470
15	569511	571973	574423	576862	579290	581707	584114	586509
16	0 569552	572013	574463	576902	579330	581747	584154	586549
17	569593	572054	574504	576943	579371	581788	584194	586589
18	569635	572095	574545	576983	579411	581828	584234	586629
19	569676	572136	574586	577024	579451	581868	584274	586669
20	0 569717	572177	574626	577065	579492	581908	584314	586709
21	569758	572218	574667	577105	579532	581948	584354	586748
22	569799	572259	574708	577146	579573	581989	584394	586788
23	569840	572300	574748	577186	579613	582029	584434	586828
24	0 569881	572341	574789	577227	579653	582069	584474	586868
25	569922	572382	574830	577267	579694	582109	584514	586908
26	569963	572423	574871	577308	579734	582149	584554	586947
27	570004	572463	574911	577348	579774	582189	584594	586987
28	0 570046	572504	574952	577389	579815	582230	584634	587027
29	570087	572545	574993	577429	579855	582270	584674	587067
30	570128	572586	575033	577470	579895	582310	584714	587107
31	570169	572627	575074	577510	579936	582350	584754	587146
32	0 570210	572668	575115	577551	579976	582390	584794	587186
33	570251	572709	575155	577591	580016	582430	584833	587226
34	570292	572750	575196	577632	580057	582470	584874	587266
35	570333	572790	575237	577672	580097	582511	584913	587306
36	0 570374	572831	575278	577713	580137	582551	584953	587345
37	570415	572872	575318	577753	580177	582591	584993	587385
38	570456	572913	575359	577794	580218	582631	585033	587425
39	570497	572954	575400	577834	580258	582671	585073	587465
40	0 570538	572995	575440	577875	580299	582711	585113	587504
41	570579	573036	575480	577915	580339	582751	585153	587544
42	570620	573076	575522	577956	580379	582792	585193	587584
43	570661	573117	575562	577996	580419	582832	585233	587624
44	0 570702	573158	575603	578037	580460	582872	585273	587663
45	570743	573199	575644	578077	580500	582912	585313	587703
46	570784	573240	575684	578118	580540	582952	585353	587743
47	570825	573281	575725	578158	580580	582992	585393	587783
48	0 570866	573321	575766	578199	580621	583032	585433	587822
49	570907	573362	575806	578239	580661	583072	585473	587862
50	570948	573403	575847	578280	580701	583112	585513	587902
51	570989	573444	575887	578320	580742	583152	585552	587942
52	0 571030	573485	575928	578360	580782	583193	585592	587981
53	571071	573525	575969	578401	580822	583233	585632	588021
54	571112	573566	576009	578441	580862	583273	585672	588061
55	571153	573607	576050	578482	580903	583313	585712	588101
56	0 571194	573648	576091	578522	580943	583353	585752	588140
57	571235	573689	576131	578563	580983	583393	585792	588180
58	571276	573730	576172	578603	581023	583433	585832	588220
59	571317	573770	576212	578643	581064	583473	585872	588259
60	0 571358	573811	576253	578684	581104	583513	585911	588299
sec	59 ^m	58 ^m	57 ^m	56 ^m	55 ^m	54 ^m	53 ^m	52 ^m

	11 ^m	12 ^m	13 ^m	14 ^m	15 ^m	16 ^m	17 ^m	18 ^m	19 ^m	
deg.	78 deg.					79 deg.				
45'	0'	15'	30'	45'	0'	15'	30'	45'		
042	9.595398	9.597744	9.600078	9.602403	9.604717	9.607021	9.609315	9.611598	9.613872	60
082	59.437	597783	600117	602442	604756	607059	609353	611636	613909	59
121	595477	597822	600156	602480	604794	607098	609391	611674	613947	58
160	595516	597861	600195	602519	604833	607136	609429	611712	613985	57
46'	1'	16'	31'	46'	1'	16'	31'	46'		
200	9.595555	9.597900	9.600234	9.602558	9.604871	9.607174	9.609467	9.611750	9.614023	56
239	595594	597939	600273	602596	604910	607213	609505	611788	614061	55
279	595633	597978	600311	602635	604948	607251	609544	611826	614098	54
318	595672	598017	600350	602673	604987	607289	609582	611864	614136	53
47'	2'	17'	32'	47'	2'	17'	32'	47'		
357	9.595712	9.598056	9.600389	9.602712	9.605025	9.607327	9.609620	9.611902	9.614174	52
396	595751	598095	600428	602751	605063	607366	609658	611940	614212	51
436	595790	598133	600467	602789	605102	607404	609696	611978	614250	50
475	595829	598172	600506	602828	605140	607442	609734	612016	614287	49
48'	3'	18'	33'	48'	3'	18'	33'	48'		
514	9.595868	9.598211	9.600544	9.602867	9.605179	9.607481	9.609772	9.612054	9.614325	48
554	595907	598250	600583	602905	605217	607519	609810	612092	614363	47
593	595946	598289	600622	602944	605256	607557	609848	612130	614401	46
632	595985	598328	600661	602983	605294	607595	609886	612167	614438	45
49'	4'	19'	34'	49'	4'	19'	34'	49'		
672	9.596025	9.598367	9.600699	9.603021	9.605333	9.607634	9.609925	9.612205	9.614476	44
711	596064	598406	600738	603059	605371	607672	609963	612243	614514	43
750	596103	598445	600777	603098	605409	607710	610001	612281	614552	42
789	596142	598484	600816	603137	605448	607748	610039	612319	614590	41
50'	5'	20'	35'	50'	5'	20'	35'	50'		
829	9.596181	9.598523	9.600854	9.603176	9.605486	9.607787	9.610077	9.612357	9.614627	40
868	596220	598562	600893	603215	605525	607825	610115	612395	614665	39
907	596259	598601	600932	603253	605563	607863	610153	612433	614703	38
947	596299	598640	600971	603291	605601	607901	610191	612471	614740	37
51'	6'	21'	36'	51'	6'	21'	36'	51'		
986	9.596338	9.598679	9.601010	9.603330	9.605640	9.607940	9.610229	9.612509	9.614779	36
025	596377	598718	601049	603368	605678	607978	610267	612547	614816	35
065	596416	598757	601087	603407	605717	608016	610305	612585	614854	34
104	596455	598796	601126	603446	605755	608054	610344	612622	614892	33
52'	7'	22'	37'	52'	7'	22'	37'	52'		
143	9.596494	9.598835	9.601165	9.603484	9.605794	9.608093	9.610382	9.612660	9.614929	32
182	596533	598873	601203	603523	605832	608131	610420	612698	614967	31
222	596572	598912	601242	603561	605870	608169	610458	612736	615005	30
261	596611	598951	601281	603600	605909	608207	610496	612774	615042	29
53'	8'	23'	38'	53'	8'	23'	38'	53'		
300	9.596650	9.598990	9.601320	9.603638	9.605947	9.608246	9.610534	9.612812	9.615080	28
339	596689	599029	601358	603677	605986	608284	610572	612850	615118	27
379	596729	599068	601397	603716	606024	608322	610610	612888	615156	26
418	596768	599107	601436	603754	606062	608360	610648	612926	615193	25
54'	9'	24'	39'	54'	9'	24'	39'	54'		
457	9.596807	9.599146	9.601474	9.603793	9.606101	9.608398	9.610686	9.612963	9.615231	24
496	596846	599185	601513	603831	606139	608436	610724	613001	615268	23
536	596885	599224	601552	603870	606177	608475	610762	613039	615306	22
575	596924	599262	601591	603908	606216	608513	610800	613077	615344	21
55'	10'	25'	40'	55'	10'	25'	40'	55'		
614	9.596963	9.599301	9.601629	9.603947	9.606254	9.608551	9.610838	9.613115	9.615382	20
653	597002	599340	601668	603985	606293	608589	610876	613153	615419	19
693	597041	599379	601707	604024	606331	608628	610914	613191	615457	18
732	597080	599418	601745	604063	606369	608666	610952	613228	615495	17
56'	11'	26'	41'	56'	11'	26'	41'	56'		
771	9.597119	9.599457	9.601784	9.604101	9.606408	9.608704	9.610990	9.613266	9.615532	16
810	597158	599496	601823	604140	606446	608742	611028	613304	615570	15
850	597197	599535	601862	604178	606484	608780	611066	613342	615608	14
889	597236	599573	601900	604217	606523	608818	611104	613380	615645	13
57'	12'	27'	42'	57'	12'	27'	42'	57'		
928	9.597275	9.599612	9.601939	9.604255	9.606561	9.608857	9.611142	9.613418	9.615683	12
967	597314	599651	601978	604294	606599	608895	611180	613456	615721	11
006	597353	599690	602016	604332	606638	608933	611218	613493	615758	10
046	597392	599729	602055	604371	606676	608971	611256	613531	615796	9
58'	13'	28'	43'	58'	13'	28'	43'	58'		
085	9.597432	9.599768	9.602094	9.604409	9.606714	9.609009	9.611294	9.613569	9.615834	8
124	597471	599807	602132	604448	606753	609048	611332	613607	615872	7
163	597510	599845	602171	604486	606791	609086	611370	613645	615909	6
202	597549	599884	602210	604525	606829	609124	611408	613683	615947	5
59'	14'	29'	44'	59'	14'	29'	44'	59'		
242	9.597588	9.599923	9.602248	9.604563	9.606868	9.609162	9.611446	9.613720	9.615984	4
281	597627	599962	602287	604602	606906	609200	611484	613758	616022	3
320	597666	600001	602326	604640	606944	609238	611522	613796	616060	2
359	597705	600040	602364	604679	606983	609277	611560	613834	616097	1
398	9.597744	9.600078	9.602403	9.604717	9.607021	9.609315	9.611598	9.613872	9.616135	0
43 ^m	48 ^m	47 ^m	46 ^m	45 ^m	44 ^m	43 ^m	42 ^m	41 ^m	40 ^m	

	20 ^m	21 ^m	22 ^m	23 ^m	24 ^m	25 ^m	26 ^m	27 ^m	28 ^m
	80 deg.				81 deg.				82
0	0 ⁰	15 ⁰	30 ⁰	45 ⁰	0 ⁰	15 ⁰	30 ⁰	45 ⁰	0 ⁰
1	0 ¹	15 ¹	30 ¹	45 ¹	0 ¹	15 ¹	30 ¹	45 ¹	0 ¹
2	0 ²	15 ²	30 ²	45 ²	0 ²	15 ²	30 ²	45 ²	0 ²
3	0 ³	15 ³	30 ³	45 ³	0 ³	15 ³	30 ³	45 ³	0 ³
4	0 ⁴	15 ⁴	30 ⁴	45 ⁴	0 ⁴	15 ⁴	30 ⁴	45 ⁴	0 ⁴
5	0 ⁵	15 ⁵	30 ⁵	45 ⁵	0 ⁵	15 ⁵	30 ⁵	45 ⁵	0 ⁵
6	0 ⁶	15 ⁶	30 ⁶	45 ⁶	0 ⁶	15 ⁶	30 ⁶	45 ⁶	0 ⁶
7	0 ⁷	15 ⁷	30 ⁷	45 ⁷	0 ⁷	15 ⁷	30 ⁷	45 ⁷	0 ⁷
8	0 ⁸	15 ⁸	30 ⁸	45 ⁸	0 ⁸	15 ⁸	30 ⁸	45 ⁸	0 ⁸
9	0 ⁹	15 ⁹	30 ⁹	45 ⁹	0 ⁹	15 ⁹	30 ⁹	45 ⁹	0 ⁹
10	0 ¹⁰	15 ¹⁰	30 ¹⁰	45 ¹⁰	0 ¹⁰	15 ¹⁰	30 ¹⁰	45 ¹⁰	0 ¹⁰
11	0 ¹¹	15 ¹¹	30 ¹¹	45 ¹¹	0 ¹¹	15 ¹¹	30 ¹¹	45 ¹¹	0 ¹¹
12	0 ¹²	15 ¹²	30 ¹²	45 ¹²	0 ¹²	15 ¹²	30 ¹²	45 ¹²	0 ¹²
13	0 ¹³	15 ¹³	30 ¹³	45 ¹³	0 ¹³	15 ¹³	30 ¹³	45 ¹³	0 ¹³
14	0 ¹⁴	15 ¹⁴	30 ¹⁴	45 ¹⁴	0 ¹⁴	15 ¹⁴	30 ¹⁴	45 ¹⁴	0 ¹⁴
15	0 ¹⁵	15 ¹⁵	30 ¹⁵	45 ¹⁵	0 ¹⁵	15 ¹⁵	30 ¹⁵	45 ¹⁵	0 ¹⁵
16	0 ¹⁶	15 ¹⁶	30 ¹⁶	45 ¹⁶	0 ¹⁶	15 ¹⁶	30 ¹⁶	45 ¹⁶	0 ¹⁶
17	0 ¹⁷	15 ¹⁷	30 ¹⁷	45 ¹⁷	0 ¹⁷	15 ¹⁷	30 ¹⁷	45 ¹⁷	0 ¹⁷
18	0 ¹⁸	15 ¹⁸	30 ¹⁸	45 ¹⁸	0 ¹⁸	15 ¹⁸	30 ¹⁸	45 ¹⁸	0 ¹⁸
19	0 ¹⁹	15 ¹⁹	30 ¹⁹	45 ¹⁹	0 ¹⁹	15 ¹⁹	30 ¹⁹	45 ¹⁹	0 ¹⁹
20	0 ²⁰	15 ²⁰	30 ²⁰	45 ²⁰	0 ²⁰	15 ²⁰	30 ²⁰	45 ²⁰	0 ²⁰
21	0 ²¹	15 ²¹	30 ²¹	45 ²¹	0 ²¹	15 ²¹	30 ²¹	45 ²¹	0 ²¹
22	0 ²²	15 ²²	30 ²²	45 ²²	0 ²²	15 ²²	30 ²²	45 ²²	0 ²²
23	0 ²³	15 ²³	30 ²³	45 ²³	0 ²³	15 ²³	30 ²³	45 ²³	0 ²³
24	0 ²⁴	15 ²⁴	30 ²⁴	45 ²⁴	0 ²⁴	15 ²⁴	30 ²⁴	45 ²⁴	0 ²⁴
25	0 ²⁵	15 ²⁵	30 ²⁵	45 ²⁵	0 ²⁵	15 ²⁵	30 ²⁵	45 ²⁵	0 ²⁵
26	0 ²⁶	15 ²⁶	30 ²⁶	45 ²⁶	0 ²⁶	15 ²⁶	30 ²⁶	45 ²⁶	0 ²⁶
27	0 ²⁷	15 ²⁷	30 ²⁷	45 ²⁷	0 ²⁷	15 ²⁷	30 ²⁷	45 ²⁷	0 ²⁷
28	0 ²⁸	15 ²⁸	30 ²⁸	45 ²⁸	0 ²⁸	15 ²⁸	30 ²⁸	45 ²⁸	0 ²⁸
29	0 ²⁹	15 ²⁹	30 ²⁹	45 ²⁹	0 ²⁹	15 ²⁹	30 ²⁹	45 ²⁹	0 ²⁹
30	0 ³⁰	15 ³⁰	30 ³⁰	45 ³⁰	0 ³⁰	15 ³⁰	30 ³⁰	45 ³⁰	0 ³⁰
31	0 ³¹	15 ³¹	30 ³¹	45 ³¹	0 ³¹	15 ³¹	30 ³¹	45 ³¹	0 ³¹
32	0 ³²	15 ³²	30 ³²	45 ³²	0 ³²	15 ³²	30 ³²	45 ³²	0 ³²
33	0 ³³	15 ³³	30 ³³	45 ³³	0 ³³	15 ³³	30 ³³	45 ³³	0 ³³
34	0 ³⁴	15 ³⁴	30 ³⁴	45 ³⁴	0 ³⁴	15 ³⁴	30 ³⁴	45 ³⁴	0 ³⁴
35	0 ³⁵	15 ³⁵	30 ³⁵	45 ³⁵	0 ³⁵	15 ³⁵	30 ³⁵	45 ³⁵	0 ³⁵
36	0 ³⁶	15 ³⁶	30 ³⁶	45 ³⁶	0 ³⁶	15 ³⁶	30 ³⁶	45 ³⁶	0 ³⁶
37	0 ³⁷	15 ³⁷	30 ³⁷	45 ³⁷	0 ³⁷	15 ³⁷	30 ³⁷	45 ³⁷	0 ³⁷
38	0 ³⁸	15 ³⁸	30 ³⁸	45 ³⁸	0 ³⁸	15 ³⁸	30 ³⁸	45 ³⁸	0 ³⁸
39	0 ³⁹	15 ³⁹	30 ³⁹	45 ³⁹	0 ³⁹	15 ³⁹	30 ³⁹	45 ³⁹	0 ³⁹
40	0 ⁴⁰	15 ⁴⁰	30 ⁴⁰	45 ⁴⁰	0 ⁴⁰	15 ⁴⁰	30 ⁴⁰	45 ⁴⁰	0 ⁴⁰
41	0 ⁴¹	15 ⁴¹	30 ⁴¹	45 ⁴¹	0 ⁴¹	15 ⁴¹	30 ⁴¹	45 ⁴¹	0 ⁴¹
42	0 ⁴²	15 ⁴²	30 ⁴²	45 ⁴²	0 ⁴²	15 ⁴²	30 ⁴²	45 ⁴²	0 ⁴²
43	0 ⁴³	15 ⁴³	30 ⁴³	45 ⁴³	0 ⁴³	15 ⁴³	30 ⁴³	45 ⁴³	0 ⁴³
44	0 ⁴⁴	15 ⁴⁴	30 ⁴⁴	45 ⁴⁴	0 ⁴⁴	15 ⁴⁴	30 ⁴⁴	45 ⁴⁴	0 ⁴⁴
45	0 ⁴⁵	15 ⁴⁵	30 ⁴⁵	45 ⁴⁵	0 ⁴⁵	15 ⁴⁵	30 ⁴⁵	45 ⁴⁵	0 ⁴⁵
46	0 ⁴⁶	15 ⁴⁶	30 ⁴⁶	45 ⁴⁶	0 ⁴⁶	15 ⁴⁶	30 ⁴⁶	45 ⁴⁶	0 ⁴⁶
47	0 ⁴⁷	15 ⁴⁷	30 ⁴⁷	45 ⁴⁷	0 ⁴⁷	15 ⁴⁷	30 ⁴⁷	45 ⁴⁷	0 ⁴⁷
48	0 ⁴⁸	15 ⁴⁸	30 ⁴⁸	45 ⁴⁸	0 ⁴⁸	15 ⁴⁸	30 ⁴⁸	45 ⁴⁸	0 ⁴⁸
49	0 ⁴⁹	15 ⁴⁹	30 ⁴⁹	45 ⁴⁹	0 ⁴⁹	15 ⁴⁹	30 ⁴⁹	45 ⁴⁹	0 ⁴⁹
50	0 ⁵⁰	15 ⁵⁰	30 ⁵⁰	45 ⁵⁰	0 ⁵⁰	15 ⁵⁰	30 ⁵⁰	45 ⁵⁰	0 ⁵⁰
51	0 ⁵¹	15 ⁵¹	30 ⁵¹	45 ⁵¹	0 ⁵¹	15 ⁵¹	30 ⁵¹	45 ⁵¹	0 ⁵¹
52	0 ⁵²	15 ⁵²	30 ⁵²	45 ⁵²	0 ⁵²	15 ⁵²	30 ⁵²	45 ⁵²	0 ⁵²
53	0 ⁵³	15 ⁵³	30 ⁵³	45 ⁵³	0 ⁵³	15 ⁵³	30 ⁵³	45 ⁵³	0 ⁵³
54	0 ⁵⁴	15 ⁵⁴	30 ⁵⁴	45 ⁵⁴	0 ⁵⁴	15 ⁵⁴	30 ⁵⁴	45 ⁵⁴	0 ⁵⁴
55	0 ⁵⁵	15 ⁵⁵	30 ⁵⁵	45 ⁵⁵	0 ⁵⁵	15 ⁵⁵	30 ⁵⁵	45 ⁵⁵	0 ⁵⁵
56	0 ⁵⁶	15 ⁵⁶	30 ⁵⁶	45 ⁵⁶	0 ⁵⁶	15 ⁵⁶	30 ⁵⁶	45 ⁵⁶	0 ⁵⁶
57	0 ⁵⁷	15 ⁵⁷	30 ⁵⁷	45 ⁵⁷	0 ⁵⁷	15 ⁵⁷	30 ⁵⁷	45 ⁵⁷	0 ⁵⁷
58	0 ⁵⁸	15 ⁵⁸	30 ⁵⁸	45 ⁵⁸	0 ⁵⁸	15 ⁵⁸	30 ⁵⁸	45 ⁵⁸	0 ⁵⁸
59	0 ⁵⁹	15 ⁵⁹	30 ⁵⁹	45 ⁵⁹	0 ⁵⁹	15 ⁵⁹	30 ⁵⁹	45 ⁵⁹	0 ⁵⁹
60	0 ⁶⁰	15 ⁶⁰	30 ⁶⁰	45 ⁶⁰	0 ⁶⁰	15 ⁶⁰	30 ⁶⁰	45 ⁶⁰	0 ⁶⁰
61	0 ⁶¹	15 ⁶¹	30 ⁶¹	45 ⁶¹	0 ⁶¹	15 ⁶¹	30 ⁶¹	45 ⁶¹	0 ⁶¹
62	0 ⁶²	15 ⁶²	30 ⁶²	45 ⁶²	0 ⁶²	15 ⁶²	30 ⁶²	45 ⁶²	0 ⁶²
63	0 ⁶³	15 ⁶³	30 ⁶³	45 ⁶³	0 ⁶³	15 ⁶³	30 ⁶³	45 ⁶³	0 ⁶³
64	0 ⁶⁴	15 ⁶⁴	30 ⁶⁴	45 ⁶⁴	0 ⁶⁴	15 ⁶⁴	30 ⁶⁴	45 ⁶⁴	0 ⁶⁴
65	0 ⁶⁵	15 ⁶⁵	30 ⁶⁵	45 ⁶⁵	0 ⁶⁵	15 ⁶⁵	30 ⁶⁵	45 ⁶⁵	0 ⁶⁵
66	0 ⁶⁶	15 ⁶⁶	30 ⁶⁶	45 ⁶⁶	0 ⁶⁶	15 ⁶⁶	30 ⁶⁶	45 ⁶⁶	0 ⁶⁶
67	0 ⁶⁷	15 ⁶⁷	30 ⁶⁷	45 ⁶⁷	0 ⁶⁷	15 ⁶⁷	30 ⁶⁷	45 ⁶⁷	0 ⁶⁷
68	0 ⁶⁸	15 ⁶⁸	30 ⁶⁸	45 ⁶⁸	0 ⁶⁸	15 ⁶⁸	30 ⁶⁸	45 ⁶⁸	0 ⁶⁸
69	0 ⁶⁹	15 ⁶⁹	30 ⁶⁹	45 ⁶⁹	0 ⁶⁹	15 ⁶⁹	30 ⁶⁹	45 ⁶⁹	0 ⁶⁹
70	0 ⁷⁰	15 ⁷⁰	30 ⁷⁰	45 ⁷⁰	0 ⁷⁰	15 ⁷⁰	30 ⁷⁰	45 ⁷⁰	0 ⁷⁰
71	0 ⁷¹	15 ⁷¹	30 ⁷¹	45 ⁷¹	0 ⁷¹	15 ⁷¹	30 ⁷¹	45 ⁷¹	0 ⁷¹
72	0 ⁷²	15 ⁷²	30 ⁷²	45 ⁷²	0 ⁷²	15 ⁷²	30 ⁷²	45 ⁷²	0 ⁷²
73	0 ⁷³	15 ⁷³	30 ⁷³	45 ⁷³	0 ⁷³	15 ⁷³	30 ⁷³	45 ⁷³	0 ⁷³
74	0 ⁷⁴	15 ⁷⁴	30 ⁷⁴	45 ⁷⁴	0 ⁷⁴	15 ⁷⁴	30 ⁷⁴	45 ⁷⁴	0 ⁷⁴
75	0 ⁷⁵	15 ⁷⁵	30 ⁷⁵	45 ⁷⁵	0 ⁷⁵	15 ⁷⁵	30 ⁷⁵	45 ⁷⁵	0 ⁷⁵
76	0 ⁷⁶	15 ⁷⁶	30 ⁷⁶	45 ⁷⁶	0 ⁷⁶	15 ⁷⁶	30 ⁷⁶	45 ⁷⁶	0 ⁷⁶
77	0 ⁷⁷	15 ⁷⁷	30 ⁷⁷	45 ⁷⁷	0 ⁷⁷	15 ⁷⁷	30 ⁷⁷	45 ⁷⁷	0 ⁷⁷
78	0 ⁷⁸	15 ⁷⁸	30 ⁷⁸	45 ⁷⁸	0 ⁷⁸	15 ⁷⁸	30 ⁷⁸	45 ⁷⁸	0 ⁷⁸
79	0 ⁷⁹	15 ⁷⁹	30 ⁷⁹	45 ⁷⁹	0 ⁷⁹	15 ⁷⁹	30 ⁷⁹	45 ⁷⁹	0 ⁷⁹
80	0 ⁸⁰	15 ⁸⁰	30 ⁸⁰	45 ⁸⁰	0 ⁸⁰	15 ⁸⁰	30 ⁸⁰	45 ⁸⁰	0 ⁸⁰
81	0 ⁸¹	15 ⁸¹	30 ⁸¹	45 ⁸¹	0 ⁸¹	15 ⁸¹	30 ⁸¹	45 ⁸¹	0 ⁸¹
82	0 ⁸²	15 ⁸²	30 ⁸²	45 ⁸²	0 ⁸²	15 ⁸²	30 ⁸²	45 ⁸²	0 ⁸²
83	0 ⁸³	15 ⁸³	30 ⁸³	45 ⁸³	0 ⁸³	15 ⁸³	30 ⁸³	45 ⁸³	0 ⁸³
84	0 ⁸⁴	15 ⁸⁴	30 ⁸⁴	45 ⁸⁴	0 ⁸⁴	15 ⁸⁴	30 ⁸⁴	45 ⁸⁴	0 ⁸⁴
85	0 ⁸⁵	15 ⁸⁵	30 ⁸⁵	45 ⁸⁵	0 ⁸⁵	15 ⁸⁵	30 ⁸⁵	45 ⁸⁵	0 ⁸⁵
86	0 ⁸⁶	15 ⁸⁶	30 ⁸⁶	45 ⁸⁶	0 ⁸⁶	15 ⁸⁶	30 ⁸⁶	45 ⁸⁶	0 ⁸⁶
87	0 ⁸⁷	15 ⁸⁷	30 ⁸⁷	45 ⁸⁷	0 ⁸⁷	15 ⁸⁷	30 ⁸⁷	45 ⁸⁷	0 ⁸⁷
88	0 ⁸⁸	15 ⁸⁸	30 ⁸⁸	45 ⁸⁸	0 ⁸⁸	15 ⁸⁸	30 ⁸⁸	45 ⁸⁸	0 ⁸⁸
89	0 ⁸⁹	15 ⁸⁹	30 ⁸⁹	45 ⁸⁹					

5 Hours.

Log. Havreine. (1)

5 Hours.

	30"	31"	32"	33"	34"	35"	36"	37"	38"	39"	
	82 deg.		83 deg.				84 deg.				
	30'	45'	0'	15'	30'	45'	0'	15'	30'	45'	0'
0	9.638227	9.640383	9.642529	9.644666	9.646794	9.648913	9.651022	9.653122	9.655213	9.657294	60
1	15 638263	640418	642565	644702	646829	648948	651057	653157	655247	657329	59
2	30 638299	640454	642601	644737	646865	648983	651092	653192	655282	657363	58
3	45 638335	640490	642636	644773	646900	649018	651127	653227	655317	657398	57
4	0 9.638371	9.640526	9.642672	9.644808	9.646936	9.649053	9.651162	9.653261	9.655352	9.657433	56
5	15 638407	640562	642708	644844	646971	649088	651197	653296	655387	657467	55
6	30 638443	640598	642743	644880	647006	649124	651232	653331	655421	657502	54
7	45 638479	640633	642779	644915	647042	649159	651267	653366	655456	657536	53
8	0 9.638515	9.640669	9.642815	9.644951	9.647077	9.649194	9.651302	9.653401	9.655491	9.657571	52
9	15 638551	640705	642850	644986	647112	649230	651337	653436	655525	657606	51
10	30 638587	640741	642886	645022	647148	649265	651372	653471	655560	657640	50
11	45 638622	640777	642922	645057	647183	649300	651407	653506	655595	657675	49
12	0 9.638658	9.640813	9.642957	9.645093	9.647219	9.649335	9.651443	9.653541	9.655630	9.657709	48
13	15 638694	640848	642993	645128	647254	649370	651478	653575	655664	657744	47
14	30 638730	640884	643029	645164	647289	649406	651513	653610	655699	657779	46
15	45 638766	640920	643064	645199	647325	649441	651548	653645	655734	657813	45
16	0 9.638802	9.640956	9.643100	9.645235	9.647360	9.649476	9.651583	9.653680	9.655769	9.657848	44
17	15 638838	640992	643136	645270	647395	649511	651618	653715	655803	657883	43
18	30 638874	641028	643171	645306	647431	649546	651653	653750	655838	657917	42
19	45 638910	641063	643207	645341	647466	649581	651688	653785	655873	657951	41
20	0 9.638946	9.641099	9.643243	9.645377	9.647501	9.649617	9.651723	9.653820	9.655907	9.657986	40
21	15 638982	641135	643278	645412	647537	649652	651758	653854	655942	658020	39
22	30 639018	641171	643314	645448	647572	649687	651793	653889	655977	658058	38
23	45 639054	641207	643349	645483	647607	649722	651828	653924	656011	658090	37
24	0 9.639090	9.641242	9.643385	9.645519	9.647643	9.649757	9.651863	9.653959	9.656046	9.658124	36
25	15 639126	641278	643421	645554	647678	649792	651898	653994	656081	658159	35
26	30 639162	641314	643456	645590	647713	649828	651933	654029	656116	658193	34
27	45 639198	641350	643492	645625	647749	649863	651968	654064	656150	658228	33
28	0 9.639234	9.641385	9.643528	9.645660	9.647784	9.649898	9.652003	9.654099	9.656185	9.658262	32
29	15 639270	641421	643563	645696	647819	649933	652038	654133	656220	658297	31
30	30 639306	641457	643599	645731	647855	649968	652073	654168	656254	658332	30
31	45 639342	641493	643635	645766	647890	650003	652108	654203	656288	658366	29
32	0 9.639378	9.641529	9.643670	9.645802	9.647925	9.650039	9.652143	9.654238	9.656324	9.658401	28
33	15 639414	641564	643706	645838	647960	650074	652178	654273	656358	658435	27
34	30 639449	641600	643741	645873	647996	650109	652213	654308	656393	658470	26
35	45 639485	641636	643777	645909	648031	650144	652248	654342	656428	658504	25
36	0 9.639521	9.641672	9.643813	9.645944	9.648066	9.650179	9.652283	9.654377	9.656463	9.658539	24
37	15 639557	641707	643848	645980	648101	650214	652318	654412	656497	658573	23
38	30 639593	641743	643884	646015	648137	650249	652353	654447	656532	658608	22
39	45 639629	641779	643919	646050	648172	650285	652388	654482	656567	658642	21
40	0 9.639665	9.641815	9.643955	9.646086	9.648207	9.650320	9.652423	9.654517	9.656601	9.658677	20
41	15 639701	641851	643991	646121	648243	650355	652458	654551	656636	658711	19
42	30 639737	641886	644026	646157	648278	650390	652493	654586	656671	658746	18
43	45 639773	641922	644062	646192	648313	650423	652528	654621	656705	658780	17
44	0 9.639809	9.641958	9.644097	9.646228	9.648349	9.650460	9.652563	9.654656	9.656740	9.658815	16
45	15 639844	641993	644133	646263	648384	650495	652598	654691	656775	658849	15
46	30 639880	642029	644168	646298	648419	650530	652633	654726	656809	658884	14
47	45 639916	642065	644204	646334	648454	650566	652667	654760	656844	658918	13
48	0 9.639952	9.642101	9.644240	9.646369	9.648490	9.650601	9.652702	9.654795	9.656879	9.658953	12
49	15 639988	642136	644275	646405	648525	650636	652737	654830	656913	658987	11
50	30 640024	642172	644311	646440	648550	650671	652772	654865	656948	659022	10
51	45 640060	642208	644346	646476	648585	650706	652807	654899	656982	659056	9
52	0 9.640096	9.642243	9.644382	9.646511	9.648631	9.650741	9.652842	9.654934	9.657017	9.659091	8
53	15 640131	642279	644417	646546	648666	650776	652877	654969	657052	659125	7
54	30 640167	642315	644453	646582	648701	650811	652912	655004	657086	659160	6
55	45 640203	642351	644489	646617	648736	650846	652947	655039	657121	659194	5
56	0 9.640239	9.642386	9.644524	9.646653	9.648772	9.650881	9.652982	9.655073	9.657156	9.659229	4
57	15 640275	642422	644560	646688	648807	650916	653017	655108	657190	659263	3
58	30 640311	642458	644595	646723	648841	650952	653052	655143	657225	659298	2
59	45 640347	642493	644631	646759	648877	650987	653087	655178	657259	659332	1
60	0 9.640383	9.642529	9.644666	9.646794	9.648913	9.651022	9.653122	9.655213	9.657294	9.659367	0
	29"	28"	27"	26"	25"	24"	23"	22"	21"	20"	

18 Hours.

20

18 Hours.

	40 ^m	41 ^m	42 ^m	43 ^m	44 ^m	45 ^m	46 ^m	47 ^m	48 ^m
	85 deg.				86 deg.				87 deg.
0	0°	15'	30'	45'	0°	15'	30'	45'	0°
1	659367	661430	663485	665530	667567	669594	671613	673623	675624
15	659401	661464	663519	665564	667601	669628	671647	673657	675658
230	659436	661499	663553	665598	667634	669662	671680	673690	675691
345	659470	661533	663587	665632	667668	669695	671714	673723	675724
4	0°	16'	31'	46'	1°	16'	31'	46'	1°
5	659505	661567	663621	665666	667702	669729	671747	673757	675758
15	659539	661602	663655	665700	667736	669763	671781	673790	675792
230	659573	661636	663690	665734	667770	669797	671815	673824	675824
345	659608	661670	663724	665768	667804	669831	671848	673857	675857
8	0°	17'	32'	47'	1°	17'	32'	47'	1°
9	659642	661705	663758	665802	667838	669864	671882	673890	675891
15	659677	661739	663792	665836	667871	669898	671915	673924	675924
230	659711	661773	663826	665870	667905	669931	671949	673957	675957
345	659746	661807	663860	665904	667939	669965	671982	673991	675990
12	0°	18'	33'	48'	1°	18'	33'	48'	1°
13	659780	661842	663894	665938	667973	669999	672016	674024	676024
15	659814	661876	663928	665972	668007	670033	672049	674057	676057
230	659849	661910	663963	666006	668041	670066	672083	674091	676090
345	659883	661945	663997	666040	668075	670100	672116	674124	676123
16	0°	19'	34'	49'	1°	19'	34'	49'	1°
17	659918	661979	664031	666074	668108	670134	672150	674158	676157
15	659952	662013	664065	666108	668142	670167	672183	674191	676190
230	659987	662047	664099	666142	668176	670201	672217	674224	676223
345	660021	662082	664133	666176	668210	670235	672251	674258	676256
20	0°	20'	35'	50'	1°	20'	35'	50'	1°
21	660056	662116	664167	666210	668244	670268	672284	674291	676290
15	660090	662150	664201	666244	668277	670302	672318	674325	676323
230	660124	662185	664236	666278	668311	670336	672351	674358	676356
345	660159	662219	664270	666312	668345	670369	672385	674391	676389
24	0°	21'	36'	51'	1°	21'	36'	51'	1°
25	660193	662253	664304	666346	668379	670403	672418	674425	676422
15	660227	662287	664338	666380	668413	670437	672452	674458	676456
230	660262	662322	664372	666414	668446	670470	672485	674491	676489
345	660296	662356	664406	666448	668480	670504	672519	674525	676522
28	0°	22'	37'	52'	1°	22'	37'	52'	1°
29	660331	662390	664440	666482	668514	670538	672552	674558	676555
15	660365	662424	664474	666515	668548	670571	672586	674591	676589
230	660400	662459	664508	666549	668582	670605	672619	674625	676621
345	660434	662493	664542	666583	668615	670638	672653	674658	676655
32	0°	23'	38'	53'	1°	23'	38'	53'	1°
33	660468	662527	664577	666617	668649	670672	672686	674692	676688
15	660503	662561	664611	666651	668683	670706	672720	674725	676721
230	660537	662595	664645	666685	668717	670739	672753	674758	676755
345	660571	662630	664679	666719	668751	670773	672787	674792	676788
36	0°	24'	39'	54'	1°	24'	39'	54'	1°
37	660606	662664	664713	666753	668784	670807	672820	674825	676821
15	660640	662698	664747	666787	668818	670840	672854	674858	676854
230	660675	662732	664781	666821	668852	670874	672887	674892	676887
345	660709	662767	664815	666855	668886	670908	672921	674925	676921
40	0°	25'	40'	55'	1°	25'	40'	55'	1°
41	660743	662801	664849	666889	668919	670941	672954	674958	676954
15	660778	662835	664883	666923	668953	670975	672988	674992	676987
230	660812	662869	664917	666957	668987	671008	673021	675025	677020
345	660846	662903	664951	666991	669021	671042	673055	675058	677053
44	0°	26'	41'	56'	1°	26'	41'	56'	1°
45	660881	662938	664986	667024	669054	671076	673088	675092	677086
15	660915	662972	665020	667058	669088	671109	673121	675125	677120
230	660949	663006	665054	667092	669122	671143	673155	675158	677153
345	660984	663040	665088	667126	669156	671176	673188	675192	677186
48	0°	27'	42'	57'	1°	27'	42'	57'	1°
49	661018	663074	665122	667160	669190	671210	673222	675225	677219
15	661052	663109	665156	667194	669223	671244	673255	675258	677252
230	661087	663143	665190	667228	669257	671277	673289	675291	677285
345	661121	663177	665224	667262	669291	671311	673322	675325	677319
52	0°	28'	43'	58'	1°	28'	43'	58'	1°
53	661156	663211	665258	667296	669324	671344	673356	675358	677352
15	661190	663245	665292	667329	669358	671378	673389	675391	677385
230	661224	663280	665326	667363	669392	671412	673423	675425	677418
345	661258	663314	665360	667397	669426	671445	673456	675458	677451
56	0°	29'	44'	59'	1°	29'	44'	59'	1°
57	661293	663348	665394	667431	669459	671479	673489	675491	677484
15	661327	663382	665428	667465	669493	671513	673523	675525	677518
230	661362	663416	665462	667499	669527	671546	673556	675558	677551
345	661396	663450	665496	667533	669561	671580	673590	675591	677584
60	0°	30'	45'	0°	1°	30'	45'	0°	1°
61	661430	663485	665530	667567	669594	671613	673623	675624	677617
19 ^m	19 ^m	18 ^m	17 ^m	16 ^m	15 ^m	14 ^m	13 ^m	12 ^m	11 ^m

	50 ^m	51 ^m	52 ^m	53 ^m	54 ^m	55 ^m	56 ^m	57 ^m	58 ^m	59 ^m
	87 deg.		88 deg.				89 deg.			
0	0.679601	9.681576	9.683543	9.685501	9.687450	9.689391	9.691324	9.693248	9.695163	9.697071
1	0.679634	681609	683575	685533	687482	689423	691356	693280	695195	697100
2	0.679667	681642	683608	685566	687515	689456	691388	693312	695227	697134
3	0.679700	681674	683641	685598	687547	689488	691420	693344	695259	697160
4	0.679733	681707	683673	685631	687580	689520	691452	693376	695291	697190
5	0.679766	681740	683706	685663	687612	689552	691484	693408	695323	697220
6	0.679799	681773	683739	685696	687645	689585	691516	693440	695355	697251
7	0.679832	681806	683771	685728	687677	689617	691548	693472	695387	697280
8	0.679865	681839	683804	685761	687709	689649	691581	693504	695418	697320
9	0.679898	681871	683837	685794	687742	689681	691613	693536	695450	697350
10	0.679931	681904	683869	685826	687774	689714	691645	693568	695482	697380
11	0.679964	681937	683902	685859	687806	689746	691677	693600	695514	697410
12	0.679997	681970	683935	685891	687839	689778	691709	693632	695546	697450
13	0.680029	682003	683967	685924	687871	689810	691741	693663	695577	697480
14	0.680062	682036	684000	685956	687904	689843	691773	693695	695609	697510
15	0.680095	682068	684033	685989	687936	689875	691805	693727	695641	697540
16	0.680128	682101	684066	686021	687968	689907	691838	693759	695673	697570
17	0.680161	682134	684098	686054	688001	689939	691870	693791	695705	697610
18	0.680194	682167	684131	686086	688033	689972	691902	693823	695737	697640
19	0.680227	682200	684163	686119	688066	690004	691934	693855	695769	697670
20	0.680260	682232	684196	686151	688098	690036	691966	693887	695800	697700
21	0.680293	682265	684229	686184	688130	690068	691998	693919	695832	697730
22	0.680326	682298	684261	686216	688163	690101	692030	693951	695864	697760
23	0.680359	682331	684294	686249	688195	690133	692062	693983	695896	697790
24	0.680392	682364	684327	686281	688227	690165	692094	694015	695927	697830
25	0.680425	682396	684359	686314	688260	690197	692126	694047	695959	697860
26	0.680458	682429	684392	686346	688292	690230	692158	694079	695991	697890
27	0.680491	682462	684425	686379	688325	690262	692190	694111	696023	697920
28	0.680524	682495	684457	686411	688357	690294	692223	694143	696055	697950
29	0.680557	682528	684490	686444	688389	690326	692255	694175	696086	697990
30	0.680589	682560	684523	686476	688422	690358	692287	694207	696118	698020
31	0.680622	682593	684555	686509	688454	690391	692319	694239	696150	698050
32	0.680655	682626	684588	686541	688486	690423	692351	694271	696182	698080
33	0.680688	682659	684620	686574	688519	690455	692383	694302	696214	698110
34	0.680721	682691	684653	686606	688551	690487	692415	694334	696245	698140
35	0.680754	682724	684686	686639	688583	690519	692447	694366	696277	698180
36	0.680787	682757	684718	686671	688616	690552	692479	694398	696309	698210
37	0.680820	682790	684751	686704	688648	690584	692511	694430	696341	698240
38	0.680853	682822	684784	686736	688680	690616	692543	694462	696372	698270
39	0.680886	682855	684816	686769	688713	690648	692575	694494	696404	698300
40	0.680919	682888	684849	686801	688745	690680	692607	694526	696436	698330
41	0.680951	682921	684882	686834	688777	690712	692639	694558	696468	698360
42	0.680984	682953	684914	686866	688810	690745	692671	694590	696500	698390
43	0.681017	682986	684947	686899	688843	690777	692703	694622	696531	698420
44	0.681050	683019	684979	686931	688874	690809	692735	694653	696563	698450
45	0.681083	683052	685012	686963	688907	690841	692767	694685	696595	698480
46	0.681116	683084	685044	686996	688939	690873	692800	694717	696627	698510
47	0.681149	683117	685077	687028	688971	690906	692831	694749	696658	698540
48	0.681182	683150	685110	687061	689004	690938	692864	694781	696690	698570
49	0.681214	683183	685142	687093	689036	690970	692896	694813	696722	698600
50	0.681247	683215	685175	687126	689068	691002	692928	694845	696754	698630
51	0.681280	683248	685207	687158	689100	691034	692960	694877	696785	698660
52	0.681313	683281	685240	687191	689133	691066	692992	694909	696817	698690
53	0.681346	683314	685273	687223	689165	691099	693024	694940	696849	698720
54	0.681379	683346	685305	687255	689197	691131	693056	694972	696881	698750
55	0.681412	683379	685338	687288	689230	691163	693088	695004	696912	698780
56	0.681445	683412	685370	687320	689262	691195	693120	695036	696944	698810
57	0.681477	683444	685403	687353	689294	691227	693152	695068	696976	698840
58	0.681510	683477	685435	687385	689326	691259	693184	695100	697007	698870
59	0.681543	683510	685468	687418	689359	691291	693216	695132	697039	698900
60	0.681576	683543	685501	687450	689391	691324	693248	695163	697071	698930
61	0.681609	683575	685533	687482	689423	691356	693280	695195	697100	698960
62	0.681642	683608	685566	687515	689456	691388	693312	695227	697134	698990
63	0.681674	683641	685598	687547	689488	691420	693344	695259	697160	699020
64	0.681707	683673	685631	687580	689520	691452	693376	695291	697190	699050
65	0.681740	683706	685663	687612	689552	691484	693408	695323	697220	699080
66	0.681773	683739	685696	687645	689585	691516	693440	695355	697251	699110
67	0.681806	683771	685728	687677	689617	691548	693472	695387	697280	699140
68	0.681839	683804	685761	687709	689649	691581	693504	695418	697320	699170
69	0.681871	683837	685794	687742	689681	691613	693536	695450	697350	699200
70	0.681904	683869	685826	687774	689714	691645	693568	695482	697380	699230
71	0.681937	683902	685859	687806	689746	691677	693600	695514	697410	699260
72	0.681970	683935	685891	687839	689778	691709	693632	695546	697450	699290
73	0.682003	683967	685924	687871	689810	691741	693663	695577	697480	699320
74	0.682036	684000	685956	687904	689843	691773	693695	695609	697510	699350
75	0.682068	684033	685989	687936	689875	691805	693727	695641	697540	699380
76	0.682101	684066	686021	687968	689907	691838	693759	695673	697570	699410
77	0.682134	684098	686054	688001	689939	691870	693791	695705	697610	699440
78	0.682167	684131	686086	688033	689972	691902	693823	695737	697640	699470
79	0.682200	684163	686119	688066	690004	691934	693855	695769	697670	699500
80	0.682232	684196	686151	688098	690036	691966	693887	695800	697700	699530
81	0.682265	684229	686184	688130	690068	691998	693919	695832	697730	699560
82	0.682298	684261	686216	688163	690101	692030	693951	695864	697760	699590
83	0.682331	684294	686249	688195	690133	692062	693983	695896	697790	699620
84	0.682364	684327	686281	688227	690165	692094	694015	695927	697830	699650
85	0.682396	684359	686314	688260	690197	692126	694047	695959	697860	699680
86	0.682429	684392	686346	688292	690230	692158	694079	695991	697890	699710
87	0.682462	684425	686379	688325	690262	692190	694111	696023	697920	699740
88	0.682495	684457	686411	688357	690294	692223	694143	696055	697950	699770
89	0.682528	684490	686444	688389	690326	692255	694175	696086	697990	699800
90	0.682560	684523	686476	688422	690358	692287	694207	696118	698020	699830
91	0.682593	684555	686509	688454	690391	692319	694239	696150	698050	699860
92	0.682626	684588	686541	688486	690423	692351	694271	696182	698080	699890
93	0.682659	684620	686574	688519	690455	692383	694302	696214	698110	699920
94	0.682691	684653	686606	688551	690487	692415	694334	696245	698140	699950
95	0.682724	684686	686639	688583	690519	692447	694366	696277	698180	699980
96	0.682757	68								

6 НОУА.

Log. Haversina. (1)

6 НОУА.

	0 ^m	1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m	8 ^m	9 ^m
90 deg.	90 deg.				91 deg.				92 deg.	
0	0° 0' 0"	0° 0' 15"	0° 0' 30"	0° 0' 45"	0° 0' 0"	0° 0' 15"	0° 0' 30"	0° 0' 45"	0° 0' 0"	0° 0' 15"
15	6998970	700860	702743	704618	706484	708342	710192	712034	713868	715694
30	6999001	700892	702775	704649	706515	708373	710223	712065	713899	715724
45	6999035	700924	702806	704680	706546	708404	710254	712095	713929	715755
60	6999065	700955	702837	704711	706577	708435	710284	712126	713960	715785
75	6999096	700987	702869	704743	706608	708466	710315	712157	713990	715816
90	6999128	701018	702900	704774	706639	708497	710346	712187	714021	715846
105	6999159	701049	702931	704805	706670	708528	710377	712218	714051	715876
120	6999191	701081	702962	704836	706701	708558	710408	712249	714082	715907
135	6999223	701112	702994	704867	706732	708589	710438	712279	714112	715937
150	6999254	701144	703025	704898	706763	708620	710469	712310	714143	715967
165	6999286	701175	703056	704929	706794	708651	710500	712340	714173	715998
180	6999317	701207	703087	704961	706825	708682	710531	712371	714204	716028
195	6999349	701238	703119	704992	706856	708713	710561	712402	714234	716058
210	6999380	701269	703150	705023	706887	708744	710592	712432	714264	716089
225	6999412	701301	703182	705054	706918	708775	710623	712463	714295	716119
240	6999443	701332	703213	705085	706949	708805	710653	712493	714325	716149
255	6999475	701364	703244	705116	706980	708836	710684	712524	714356	716180
270	6999506	701395	703275	705147	707011	708867	710715	712555	714386	716210
285	6999538	701426	703307	705179	707042	708898	710746	712585	714417	716240
300	6999569	701458	703338	705210	707073	708929	710776	712616	714447	716271
315	6999601	701489	703369	705241	707104	708960	710807	712646	714478	716301
330	6999633	701521	703400	705272	707135	708991	710838	712676	714508	716331
345	6999664	701552	703432	705303	707166	709022	710869	712708	714539	716362
360	6999696	701583	703463	705334	707197	709052	710899	712738	714569	716392
375	6999727	701615	703494	705365	707228	709083	710930	712769	714600	716422
390	6999759	701646	703525	705396	707259	709114	710961	712799	714630	716453
405	6999790	701678	703557	705428	707290	709145	710991	712830	714660	716483
420	6999822	701709	703588	705459	707321	709176	711022	712860	714691	716513
435	6999853	701740	703619	705490	707352	709207	711053	712891	714721	716544
450	6999885	701772	703650	705521	707383	709237	711084	712922	714752	716574
465	6999916	701803	703682	705552	707414	709268	711114	712952	714782	716604
480	6999948	701834	703713	705583	707445	709299	711145	712983	714813	716634
495	6999979	701866	703744	705614	707476	709330	711176	713013	714843	716665
510	7000011	701897	703775	705645	707507	709361	711206	713044	714873	716695
525	7000042	701929	703807	705676	707538	709392	711237	713074	714904	716725
540	7000074	701960	703838	705707	707569	709422	711268	713105	714934	716755
555	7000105	701991	703869	705739	707600	709453	711298	713136	714965	716786
570	7000137	702023	703900	705770	707631	709484	711329	713166	714995	716816
585	7000168	702054	703932	705801	707662	709515	711360	713197	715026	716846
600	7000200	702085	703963	705832	707693	709546	711391	713227	715056	716877
615	7000231	702117	703994	705863	707724	709576	711421	713258	715086	716907
630	7000263	702148	704025	705894	707755	709607	711452	713288	715117	716937
645	7000294	702180	704056	705925	707786	709638	711482	713319	715147	716968
660	7000326	702211	704087	705956	707817	709669	711513	713349	715178	716998
675	7000357	702242	704119	705987	707848	709700	711544	713380	715208	717029
690	7000389	702273	704150	706018	707878	709730	711574	713410	715238	717059
705	7000420	702305	704181	706049	707909	709761	711605	713441	715269	717089
720	7000452	702336	704212	706080	707940	709792	711636	713471	715299	717119
735	7000483	702368	704244	706112	707971	709823	711666	713502	715330	717149
750	7000515	702399	704275	706143	708002	709854	711697	713533	715360	717179
765	7000546	702431	704306	706174	708033	709884	711728	713563	715390	717209
780	7000578	702461	704337	706205	708064	709915	711758	713594	715421	717239
795	7000609	702493	704368	706236	708095	709946	711789	713624	715451	717269
810	7000641	702524	704399	706266	708126	709977	711820	713655	715481	717299
825	7000672	702556	704431	706298	708157	710008	711850	713685	715512	717329
840	7000703	702587	704462	706329	708188	710038	711881	713716	715542	717359
855	7000735	702618	704493	706360	708219	710069	711912	713746	715573	717389
870	7000766	702649	704524	706391	708249	710100	711942	713777	715603	717419
885	7000798	702681	704556	706422	708280	710131	711973	713807	715633	717449
900	7000829	702712	704587	706453	708311	710161	712004	713838	715664	717479
915	7000860	702743	704618	706484	708342	710192	712034	713868	715694	717509
930	7000891	702775	704649	706515	708373	710223	712065	713899	715724	717539
945	7000922	702806	704680	706546	708404	710254	712095	713929	715755	717569
960	7000953	702837	704711	706577	708435	710284	712126	713960	715785	717599
975	7000984	702869	704743	706608	708466	710315	712157	713990	715816	717629
990	7001015	702900	704774	706639	708497	710346	712187	714021	715846	717659
1005	7001046	702931	704805	706670	708528	710377	712218	714051	715876	717689
1020	7001077	702962	704836	706701	708558	710408	712249	714082	715907	717719
1035	7001108	702994	704867	706732	708589	710438	712279	714112	715937	717749
1050	7001139	703025	704898	706763	708620	710469	712310	714143	715967	717779
1065	7001170	703056	704929	706794	708651	710500	712340	714173	715998	717809
1080	7001201	703087	704961	706825	708682	710531	712371	714204	716028	717839
1095	7001232	703119	704992	706856	708713	710561	712402	714234	716058	717869
1110	7001263	703150	705023	706887	708744	710592	712432	714264	716089	717899
1125	7001294	703182	705054	706918	708775	710623	712463	714295	716119	717929
1140	7001325	703213	705085	706949	708805	710653	712493	714325	716149	717959
1155	7001356	703244	705116	706980	708836	710684	712524	714356	716180	717989
1170	7001387	703275	705147	707011	708867	710715	712555	714386	716210	718019
1185	7001418	703307	705179	707042	708898	710746	712585	714417	716240	718049
1200	7001449	703338	705210	707073	708929	710776	712616	714447	716271	718079
1215	7001480	703369	705241	707104	708960	710807	712646	714478	716301	718109
1230	7001511	703400	705272	707135	708991	710838	712676	714508	716331	718139
1245	7001542	703432	705303	707166	709022	710869	712708	714539	716362	718169
1260	7001573	703463	705334	707197	709052	710899	712738	714569	716392	718199
1275	7001604	703494	705365	707228	709083	710930	712769	714600	716422	718229
1290	7001635	703525	705396	707259	709114	710961	712799	714630	716453	718259
1305	7001666	703557	705428	707290	709145	710991	712830	714660	716483	718289
1320	7001697	703588	705459	707321	709176	711022	712860	714691	716513	718319
1335	7001728	703619	705490	707352	709207	711053	712891	714721	716544	718349
1350	7001759	703650	705521	707383	709237	711084	712922	714752	716574	718379
1365	7001790	703682	705552	707414	709268	711114	712952	714782	716604	718409
1380	7001821	703713	705583	707445	709299	711145	712983	714813	716634	718439
1395	7001852	703744	705614	707476	709330	711176	713013	714843	716665	718469
1410	7001883	703775	705645	707507	709361	711206	713044	714873	716695	718499
1425	7001914	703807	705676	707538	709392	711237	713074	714904		

6 Hours.

Log. Haversine. (6)

6 Hours.

	10 ^m	11 ^m	12 ^m	13 ^m	14 ^m	15 ^m	16 ^m	17 ^m	18 ^m	19 ^m	
	92 deg.			93 deg.			94 deg.				
Lat.	30'	45'	0'	15'	30'	45'	0'	15'	30'	45'	Lat.
0	9.717512	9.719322	9.721124	9.722919	9.724705	9.726484	9.728255	9.730018	9.731773	9.733520	60
1	9.717542	9.719350	9.721154	9.722949	9.724735	9.726513	9.728284	9.730047	9.731803	9.733551	59
2	9.717573	9.719382	9.721184	9.722978	9.724765	9.726543	9.728314	9.730077	9.731832	9.733580	58
3	9.717603	9.719413	9.721214	9.723008	9.724794	9.726573	9.728343	9.730106	9.731861	9.733609	57
4	9.717633	9.719443	9.721244	9.723038	9.724824	9.726602	9.728373	9.730135	9.731890	9.733638	56
5	9.717663	9.719473	9.721274	9.723068	9.724854	9.726632	9.728402	9.730165	9.731920	9.733667	55
6	9.717694	9.719503	9.721304	9.723098	9.724883	9.726661	9.728432	9.730194	9.731949	9.733696	54
7	9.717724	9.719533	9.721334	9.723128	9.724913	9.726691	9.728461	9.730223	9.731978	9.733725	53
8	9.717754	9.719563	9.721364	9.723157	9.724943	9.726721	9.728490	9.730252	9.732007	9.733754	52
9	9.717784	9.719593	9.721394	9.723187	9.724973	9.726750	9.728520	9.730282	9.732036	9.733783	51
10	9.717814	9.719623	9.721424	9.723217	9.725002	9.726780	9.728549	9.730311	9.732066	9.733812	50
11	9.717845	9.719653	9.721454	9.723247	9.725032	9.726809	9.728579	9.730341	9.732095	9.733841	49
12	9.717875	9.719683	9.721484	9.723277	9.725062	9.726839	9.728608	9.730370	9.732124	9.733870	48
13	9.717905	9.719713	9.721514	9.723306	9.725091	9.726868	9.728638	9.730399	9.732153	9.733899	47
14	9.717935	9.719743	9.721544	9.723336	9.725121	9.726898	9.728667	9.730428	9.732182	9.733928	46
15	9.717965	9.719773	9.721574	9.723366	9.725151	9.726927	9.728696	9.730458	9.732211	9.733957	45
16	9.717996	9.719804	9.721604	9.723396	9.725180	9.726957	9.728726	9.730487	9.732241	9.733986	44
17	9.718026	9.719834	9.721634	9.723426	9.725210	9.726986	9.728755	9.730516	9.732270	9.734015	43
18	9.718056	9.719864	9.721664	9.723456	9.725240	9.727016	9.728785	9.730546	9.732299	9.734044	42
19	9.718086	9.719894	9.721693	9.723485	9.725269	9.727046	9.728814	9.730575	9.732328	9.734073	41
20	9.718116	9.719924	9.721723	9.723515	9.725299	9.727075	9.728844	9.730604	9.732357	9.734102	40
21	9.718147	9.719954	9.721753	9.723545	9.725329	9.727105	9.728873	9.730633	9.732386	9.734131	39
22	9.718177	9.719984	9.721783	9.723575	9.725358	9.727134	9.728902	9.730663	9.732415	9.734161	38
23	9.718207	9.720014	9.721813	9.723604	9.725388	9.727164	9.728932	9.730692	9.732445	9.734190	37
24	9.718237	9.720044	9.721843	9.723634	9.725418	9.727193	9.728961	9.730721	9.732474	9.734219	36
25	9.718267	9.720074	9.721873	9.723664	9.725447	9.727223	9.728991	9.730751	9.732503	9.734247	35
26	9.718297	9.720104	9.721903	9.723694	9.725477	9.727252	9.729020	9.730780	9.732532	9.734277	34
27	9.718328	9.720134	9.721933	9.723724	9.725507	9.727282	9.729049	9.730809	9.732561	9.734306	33
28	9.718358	9.720164	9.721963	9.723753	9.725536	9.727311	9.729079	9.730838	9.732590	9.734335	32
29	9.718388	9.720194	9.721993	9.723783	9.725566	9.727341	9.729108	9.730868	9.732619	9.734364	31
30	9.718418	9.720224	9.722023	9.723813	9.725596	9.727370	9.729138	9.730897	9.732649	9.734393	30
31	9.718448	9.720254	9.722052	9.723843	9.725625	9.727400	9.729167	9.730926	9.732678	9.734422	29
32	9.718479	9.720284	9.722082	9.723873	9.725655	9.727429	9.729196	9.730955	9.732707	9.734451	28
33	9.718509	9.720314	9.722112	9.723902	9.725684	9.727459	9.729226	9.730985	9.732736	9.734480	27
34	9.718539	9.720344	9.722142	9.723932	9.725714	9.727488	9.729255	9.731014	9.732765	9.734509	26
35	9.718569	9.720374	9.722172	9.723962	9.725744	9.727518	9.729284	9.731043	9.732794	9.734538	25
36	9.718599	9.720404	9.722202	9.723992	9.725773	9.727547	9.729314	9.731072	9.732823	9.734567	24
37	9.718629	9.720435	9.722232	9.724021	9.725803	9.727577	9.729343	9.731102	9.732852	9.734596	23
38	9.718659	9.720465	9.722262	9.724051	9.725833	9.727606	9.729373	9.731131	9.732882	9.734625	22
39	9.718689	9.720495	9.722292	9.724081	9.725862	9.727636	9.729402	9.731160	9.732911	9.734653	21
40	9.718720	9.720525	9.722322	9.724111	9.725892	9.727665	9.729431	9.731189	9.732940	9.734683	20
41	9.718750	9.720555	9.722351	9.724140	9.725922	9.727695	9.729461	9.731219	9.732969	9.734711	19
42	9.718780	9.720585	9.722381	9.724170	9.725951	9.727724	9.729490	9.731248	9.732998	9.734741	18
43	9.718810	9.720615	9.722411	9.724200	9.725981	9.727754	9.729519	9.731277	9.733027	9.734769	17
44	9.718840	9.720645	9.722441	9.724230	9.726010	9.727783	9.729549	9.731306	9.733056	9.734798	16
45	9.718870	9.720675	9.722471	9.724259	9.726040	9.727813	9.729578	9.731335	9.733085	9.734827	15
46	9.718901	9.720705	9.722501	9.724289	9.726070	9.727842	9.729607	9.731365	9.733114	9.734856	14
47	9.718931	9.720735	9.722531	9.724319	9.726099	9.727872	9.729637	9.731394	9.733143	9.734885	13
48	9.718961	9.720765	9.722561	9.724349	9.726129	9.727901	9.729666	9.731423	9.733173	9.734914	12
49	9.718991	9.720795	9.722590	9.724378	9.726158	9.727931	9.729695	9.731452	9.733202	9.734943	11
50	9.719021	9.720825	9.722620	9.724408	9.726188	9.727960	9.729725	9.731482	9.733231	9.734972	10
51	9.719051	9.720855	9.722650	9.724438	9.726218	9.727990	9.729754	9.731511	9.733260	9.735001	9
52	9.719081	9.720885	9.722680	9.724468	9.726247	9.728019	9.729784	9.731540	9.733289	9.735030	8
53	9.719111	9.720915	9.722710	9.724497	9.726276	9.728049	9.729813	9.731569	9.733318	9.735059	7
54	9.719142	9.720945	9.722740	9.724527	9.726306	9.728078	9.729842	9.731598	9.733347	9.735088	6
55	9.719172	9.720975	9.722770	9.724557	9.726336	9.728108	9.729871	9.731628	9.733376	9.735117	5
56	9.719202	9.721005	9.722799	9.724586	9.726366	9.728137	9.729901	9.731657	9.733405	9.735146	4
57	9.719232	9.721034	9.722829	9.724616	9.726395	9.728167	9.729930	9.731686	9.733434	9.735175	3
58	9.719262	9.721064	9.722859	9.724646	9.726425	9.728196	9.729960	9.731715	9.733463	9.735204	2
59	9.719292	9.721094	9.722889	9.724676	9.726454	9.728225	9.729989	9.731744	9.733492	9.735233	1
60	9.719322	9.721124	9.722919	9.724705	9.726484	9.728255	9.730018	9.731773	9.733520	9.735262	0
	49 ^m	48 ^m	47 ^m	46 ^m	45 ^m	44 ^m	43 ^m	42 ^m	41 ^m	40 ^m	

17 Hours.

254

17 Hours.

	20 ^m	21 ^m	22 ^m	23 ^m	24 ^m	25 ^m	26 ^m	27 ^m	28 ^m	29 ^m
	95 deg.				96 deg.				97 deg.	
0	9.735262	9.736994	9.738719	9.740437	9.742147	9.743849	9.745544	9.747232	9.748912	9.75058
1	15 735291	737023	738748	740463	742173	743878	745573	747260	748940	75061
2	30 735320	737052	738777	740494	742204	743906	745601	747288	748968	75066
3	45 735349	737081	738805	740523	742232	743934	745629	747316	748996	75066
4	0 9.735378	9.737110	9.738834	9.740551	9.742261	9.743963	9.745657	9.747344	9.749024	9.75069
5	15 735407	737139	738863	740580	742289	743991	745685	747372	749052	7507
6	30 735435	737167	738892	740608	742318	744019	745714	747400	749080	7507
7	45 735464	737196	738920	740637	742346	744047	745742	747428	749108	75078
8	0 9.735493	9.737225	9.738949	9.740665	9.742374	9.744076	9.745770	9.747457	9.749136	9.75080
9	15 735522	737254	738977	740694	742403	744104	745798	747485	749164	7508
10	30 735551	737282	739006	740722	742431	744132	745826	747513	749192	7508
11	45 735580	737311	739035	740751	742459	744161	745854	747541	749219	7508
12	0 9.735609	9.737340	9.739064	9.740780	9.742488	9.744189	9.745883	9.747569	9.749247	9.7509
13	15 735638	737379	739092	740808	742516	744217	745911	747597	749275	7509
14	30 735667	737398	739121	740837	742545	744246	745939	747625	749303	7509
15	45 735696	737426	739149	740865	742573	744274	745967	747653	749331	7510
16	0 9.735725	9.737455	9.739178	9.740894	9.742602	9.744302	9.745995	9.747681	9.749359	9.7510
17	15 735753	737484	739207	740922	742630	744330	746023	747709	749387	7510
18	30 735782	737513	739235	740951	742658	744359	746052	747737	749415	7510
19	45 735811	737541	739264	740979	742687	744387	746080	747765	749443	751
20	0 9.735840	9.737570	9.739293	9.741008	9.742715	9.744415	9.746108	9.747793	9.749471	9.751
21	15 735869	737599	739321	741036	742744	744443	746136	747821	749499	751
22	30 735898	737628	739350	741065	742772	744472	746164	747849	749527	751
23	45 735927	737656	739379	741093	742800	744500	746192	747877	749554	751
24	0 9.735956	9.737685	9.739407	9.741122	9.742829	9.744528	9.746220	9.747906	9.749582	9.751
25	15 735985	737714	739436	741150	742857	744557	746248	747933	749610	751
26	30 736014	737743	739465	741179	742886	744585	746277	747961	749638	751
27	45 736042	737772	739493	741207	742914	744613	746305	747989	749666	751
28	0 9.736071	9.737800	9.739522	9.741236	9.742942	9.744641	9.746333	9.748017	9.749694	9.751
29	15 736100	737829	739551	741264	742971	744669	746361	748045	749722	751
30	30 736129	737858	739579	741293	742999	744698	746389	748073	749750	751
31	45 736158	737887	739608	741321	743027	744726	746417	748101	749777	751
32	0 9.736187	9.737915	9.739636	9.741350	9.743056	9.744754	9.746445	9.748129	9.749805	9.751
33	15 736216	737944	739665	741378	743084	744783	746473	748157	749833	751
34	30 736245	737973	739694	741407	743113	744811	746502	748185	749861	751
35	45 736273	738001	739722	741435	743141	744839	746530	748213	749889	751
36	0 9.736302	9.738030	9.739751	9.741464	9.743169	9.744867	9.746558	9.748241	9.749917	9.751
37	15 736331	738059	739779	741492	743198	744895	746586	748269	749945	751
38	30 736360	738088	739808	741521	743226	744924	746614	748297	749973	751
39	45 736389	738116	739837	741549	743254	744952	746642	748325	750000	751
40	0 9.736418	9.738145	9.739865	9.741578	9.743283	9.744980	9.746670	9.748353	9.750028	9.751
41	15 736446	738174	739894	741606	743311	745008	746698	748381	750056	9.751
42	30 736475	738203	739922	741635	743339	745037	746727	748409	750084	9.751
43	45 736504	738231	739951	741663	743368	745065	746755	748437	750112	9.751
44	0 9.736533	9.738260	9.739980	9.741692	9.743396	9.745093	9.746783	9.748465	9.750140	9.751
45	15 736562	738289	740008	741720	743424	745121	746811	748493	750168	9.751
46	30 736591	738318	740037	741749	743453	745150	746839	748521	750195	9.751
47	45 736620	738346	740065	741777	743481	745178	746867	748549	750223	9.751
48	0 9.736648	9.738375	9.740094	9.741806	9.743510	9.745206	9.746895	9.748577	9.750251	9.751
49	15 736677	738404	740123	741834	743538	745234	746923	748605	750279	9.751
50	30 736706	738432	740151	741862	743566	745262	746951	748633	750307	9.751
51	45 736735	738461	740180	741891	743595	745291	746979	748661	750335	9.751
52	0 9.736764	9.738490	9.740208	9.741919	9.743623	9.745319	9.747007	9.748689	9.750363	9.751
53	15 736793	738518	740237	741948	743651	745347	747035	748717	750390	9.751
54	30 736821	738547	740266	741976	743680	745375	747064	748745	750418	9.751
55	45 736850	738576	740294	742005	743708	745403	747092	748773	750446	9.751
56	0 9.736879	9.738605	9.740323	9.742033	9.743736	9.745432	9.747120	9.748801	9.750474	9.751
57	15 736908	738633	740351	742061	743764	745460	747148	748828	750502	9.751
58	30 736937	738662	740380	742090	743793	745488	747176	748856	750529	9.751
59	45 736965	738691	740408	742118	743821	745516	747204	748884	750557	9.751
60	0 9.736994	9.738719	9.740437	9.742147	9.743849	9.745544	9.747232	9.748912	9.75058	9.751
	39 ^m	38 ^m	37 ^m	36 ^m	35 ^m	34 ^m	33 ^m	32 ^m	31 ^m	30 ^m

30°	31°	32°	33°	34°	35°	36°	37°	38°	39°	
97 deg.		98 deg.				99 deg.				
52261	9.753909	9.755560	9.757203	9.758840	9.760469	9.762091	9.763706	9.765314	9.766914	60
52278	753936	755537	757231	758867	760496	762118	763733	765341	766941	59
52306	753964	755615	757258	758894	760523	762145	763760	765367	766968	58
52333	753992	755642	757285	758921	760550	762172	763786	765394	766995	57
52361	9.754019	9.755670	9.757313	9.758949	9.760577	9.762199	9.763813	9.765421	9.767021	56
52389	754047	755697	757340	758976	760604	762226	763840	765447	767047	55
52417	754074	755724	757367	759003	760632	762253	763867	765474	767074	54
52444	754102	755752	757395	759030	760659	762280	763894	765501	767101	53
52472	9.754129	9.755779	9.757422	9.759057	9.760686	9.762307	9.763921	9.765528	9.767127	52
52500	754157	755807	757449	759085	760713	762334	763948	765554	767154	51
52528	754184	755834	757477	759112	760740	762361	763974	765581	767180	50
52555	754212	755862	757504	759139	760767	762388	764001	765608	767207	49
52583	9.754239	9.755889	9.757531	9.759166	9.760794	9.762415	9.764028	9.765634	9.767234	48
52610	754267	755916	757559	759193	760821	762442	764055	765661	767260	47
52638	754295	755944	757586	759221	760848	762468	764082	765688	767287	46
52666	754322	755971	757613	759248	760875	762495	764109	765714	767313	45
52694	9.754350	9.755999	9.757640	9.759275	9.760902	9.762522	9.764135	9.765741	9.767340	44
52721	754377	756026	757668	759302	760929	762549	764162	765768	767367	43
52749	754405	756054	757695	759329	760956	762576	764189	765795	767393	42
52776	754432	756081	757722	759356	760983	762603	764216	765821	767420	41
52804	9.754460	9.756108	9.757750	9.759384	9.761010	9.762630	9.764243	9.765848	9.767446	40
52832	754487	756136	757777	759411	761038	762657	764269	765875	767473	39
52859	754515	756163	757804	759438	761065	762684	764296	765901	767499	38
52887	754542	756191	757831	759465	761092	762711	764323	765928	767526	37
52915	9.754570	9.756218	9.757859	9.759492	9.761119	9.762738	9.764350	9.765955	9.767553	36
52942	754597	756245	757886	759519	761146	762765	764377	765981	767579	35
52970	754625	756273	757913	759547	761173	762792	764403	766008	767606	34
52998	754653	756300	757941	759574	761200	762819	764430	766035	767632	33
53025	9.754680	9.756328	9.757968	9.759601	9.761227	9.762846	9.764457	9.766062	9.767659	32
53053	754708	756355	757995	759628	761254	762872	764484	766088	767685	31
53081	754735	756382	758022	759655	761281	762899	764511	766115	767712	30
53108	754763	756410	758050	759682	761308	762926	764537	766142	767739	29
53136	9.754790	9.756437	9.758077	9.759710	9.761335	9.762953	9.764564	9.766168	9.767765	28
53163	754818	756465	758104	759737	761362	762980	764591	766195	767792	27
53191	754845	756492	758132	759764	761389	763007	764618	766222	767818	26
53219	754873	756519	758159	759791	761416	763034	764645	766248	767845	25
53246	9.754900	9.756547	9.758186	9.759818	9.761443	9.763061	9.764671	9.766275	9.767871	24
53274	754928	756574	758213	759845	761470	763088	764698	766302	767898	23
53302	754955	756602	758241	759872	761497	763115	764724	766328	767924	22
53329	754983	756629	758268	759899	761524	763142	764751	766355	767951	21
53357	9.755010	9.756656	9.758295	9.759927	9.761551	9.763168	9.764779	9.766382	9.767978	20
53384	755038	756684	758322	759954	761578	763195	764805	766408	768004	19
53412	755065	756711	758350	759981	761605	763222	764832	766435	768031	18
53440	755093	756738	758377	760008	761632	763249	764859	766462	768057	17
53467	9.755120	9.756766	9.758404	9.760035	9.761659	9.763276	9.764886	9.766488	9.768084	16
53495	755148	756793	758431	760062	761686	763303	764912	766515	768110	15
53523	755175	756821	758459	760089	761713	763330	764939	766541	768137	14
53550	755203	756848	758487	760117	761740	763357	764966	766568	768163	13
53578	9.755230	9.756875	9.758513	9.760144	9.761767	9.763384	9.764993	9.766595	9.768190	12
53605	755258	756903	758540	760171	761794	763410	765019	766621	768216	11
53633	755285	756930	758568	760198	761821	763437	765046	766648	768243	10
53661	755313	756957	758595	760225	761848	763464	765073	766675	768269	9
53688	9.755340	9.756985	9.758622	9.760252	9.761875	9.763491	9.765100	9.766701	9.768296	8
53716	755367	757012	758649	760279	761902	763518	765126	766728	768322	7
53743	755395	757039	758676	760306	761929	763545	765153	766755	768349	6
53771	755422	757067	758704	760333	761956	763572	765180	766781	768375	5
53799	9.755450	9.757094	9.758731	9.760361	9.761983	9.763598	9.765207	9.766808	9.768402	4
53826	755477	757121	758758	760388	762010	763625	765233	766835	768428	3
53854	755505	757149	758785	760415	762037	763652	765260	766861	768455	2
53881	755532	757176	758813	760442	762064	763679	765287	766888	768481	1
53909	9.755560	9.757203	9.758840	9.760469	9.762091	9.763706	9.765314	9.766914	9.768508	0
29°	28°	27°	26°	25°	24°	23°	22°	21°	20°	

	40 ^m	41 ^m	42 ^m	43 ^m	44 ^m	45 ^m	46 ^m	47 ^m	48 ^m	4
	100 deg.				101 deg.				102 deg.	
0	0°	15°	30°	45°	0°	15°	30°	45°	0°	15°
0	9.768508	9.770094	9.771674	9.773247	9.774812	9.776371	9.777922	9.779467	9.781005	9.782536
1	15	768534	770121	771700	773273	774838	776397	777948	779493	781031
2	30	768561	770147	771727	773299	774864	776423	777974	779519	781056
3	45	768587	770174	771753	773325	774890	776448	778000	779544	781082
4	0	1°	16°	31°	46°	1°	16°	31°	46°	1°
4	0	9.768614	9.770200	9.771779	9.773351	9.774916	9.776474	9.778026	9.779570	9.781107
5	15	768640	770226	771805	773377	774942	776500	778051	779596	781133
6	30	768667	770253	771832	773403	774968	776526	778077	779621	781159
7	45	768693	770279	771858	773429	774994	776552	778103	779647	781184
8	0	1°	17°	32°	47°	1°	17°	32°	47°	1°
8	0	9.768720	9.770305	9.771884	9.773456	9.775020	9.776578	9.778129	9.779673	9.781210
9	15	768746	770332	771910	773482	775046	776604	778155	779698	781235
10	30	768773	770358	771937	773508	775072	776629	778180	779724	781261
11	45	768799	770385	771963	773531	775098	776656	778206	779750	781286
12	0	1°	18°	33°	48°	1°	18°	33°	48°	1°
12	0	9.768826	9.770411	9.771989	9.773560	9.775124	9.776682	9.778232	9.779775	9.781312
13	15	768852	770437	772015	773586	775150	776707	778258	779801	781338
14	30	768879	770464	772042	773612	775176	776733	778284	779827	781363
15	45	768905	770490	772068	773639	775202	776759	778309	779852	781388
16	0	1°	19°	34°	49°	1°	19°	34°	49°	1°
16	0	9.768932	9.770516	9.772094	9.773665	9.775228	9.776785	9.778335	9.779878	9.781414
17	15	768958	770543	772120	773691	775254	776811	778361	779904	781440
18	30	768985	770569	772147	773717	775280	776837	778387	779929	781465
19	45	769011	770595	772173	773743	775306	776863	778412	779955	781491
20	0	1°	20°	35°	50°	1°	20°	35°	50°	1°
20	0	9.769038	9.770622	9.772199	9.773769	9.775332	9.776889	9.778438	9.779981	9.781519
21	15	769064	770648	772225	773795	775358	776915	778464	780006	781545
22	30	769090	770674	772251	773821	775384	776940	778490	780032	781571
23	45	769117	770701	772277	773847	775410	776966	778515	780057	781597
24	0	1°	21°	36°	51°	1°	21°	36°	51°	1°
24	0	9.769143	9.770727	9.772304	9.773874	9.775436	9.776992	9.778541	9.780083	9.781625
25	15	769170	770753	772330	773900	775462	777018	778567	780109	781651
26	30	769196	770780	772356	773926	775488	777044	778593	780135	781677
27	45	769223	770806	772382	773952	775514	777070	778618	780160	781703
28	0	1°	22°	37°	52°	1°	22°	37°	52°	1°
28	0	9.769249	9.770832	9.772409	9.773978	9.775540	9.777096	9.778644	9.780186	9.781729
29	15	769276	770859	772435	774004	775566	777122	778670	780211	781755
30	30	769302	770885	772461	774030	775592	777147	778696	780237	781781
31	45	769328	770911	772487	774056	775618	777173	778721	780263	781807
32	0	1°	23°	38°	53°	1°	23°	38°	53°	1°
32	0	9.769355	9.770938	9.772514	9.774082	9.775644	9.777199	9.778747	9.780288	9.781829
33	15	769381	770964	772540	774108	775670	777225	778773	780314	781855
34	30	769408	770990	772566	774135	775696	777251	778799	780340	781881
35	45	769434	771017	772592	774161	775722	777277	778824	780365	781907
36	0	1°	24°	39°	54°	1°	24°	39°	54°	1°
36	0	9.769461	9.771043	9.772618	9.774187	9.775748	9.777303	9.778850	9.780391	9.781935
37	15	769487	771069	772645	774213	775774	777328	778876	780416	781960
38	30	769514	771096	772671	774239	775800	777354	778902	780442	781986
39	45	769540	771122	772697	774265	775826	777380	778927	780468	782011
40	0	1°	25°	40°	55°	1°	25°	40°	55°	1°
40	0	9.769566	9.771148	9.772723	9.774291	9.775852	9.777406	9.778953	9.780493	9.782037
41	15	769593	771174	772749	774317	775878	777432	778979	780519	782062
42	30	769619	771201	772776	774343	775904	777458	779005	780545	782088
43	45	769646	771227	772802	774369	775930	777483	779030	780570	782113
44	0	1°	26°	41°	56°	1°	26°	41°	56°	1°
44	0	9.769672	9.771253	9.772828	9.774395	9.775956	9.777509	9.779056	9.780596	9.782139
45	15	769698	771280	772854	774421	775982	777535	779082	780621	782164
46	30	769725	771306	772880	774447	776008	777561	779107	780647	782189
47	45	769751	771332	772906	774473	776034	777587	779133	780672	782215
48	0	1°	27°	42°	57°	1°	27°	42°	57°	1°
48	0	9.769778	9.771359	9.772933	9.774500	9.776060	9.777613	9.779159	9.780698	9.782231
49	15	769804	771385	772959	774526	776085	777638	779185	780724	782256
50	30	769831	771411	772985	774551	776111	777664	779210	780749	782282
51	45	769857	771437	773011	774578	776137	777690	779236	780775	782307
52	0	1°	28°	43°	58°	1°	28°	43°	58°	1°
52	0	9.769883	9.771464	9.773037	9.774604	9.776163	9.777716	9.779262	9.780801	9.782333
53	15	769910	771490	773063	774630	776189	777742	779287	780826	782358
54	30	769936	771516	773090	774656	776215	777768	779313	780852	782383
55	45	769962	771543	773116	774682	776241	777793	779339	780877	782409
56	0	1°	29°	44°	59°	1°	29°	44°	59°	1°
56	0	9.769989	9.771569	9.773142	9.774708	9.776267	9.777819	9.779364	9.780903	9.782434
57	15	770015	771595	773168	774734	776293	777845	779390	780928	782460
58	30	770042	771621	773194	774760	776319	777871	779416	780954	782485
59	45	770068	771648	773220	774786	776345	777897	779441	780980	782511
60	0	1°	30°	45°	60°	1°	30°	45°	60°	1°
60	0	9.770094	9.771674	9.773247	9.774812	9.776371	9.777922	9.779467	9.781005	9.782536
	19 ^m	18 ^m	17 ^m	16 ^m	15 ^m	14 ^m	13 ^m	12 ^m	11 ^m	10 ^m

6 HOURS.

Log. Haversines. (I)

6 HOURS.

50"	51"	52"	53"	54"	55"	56"	57"	58"	59"	
102 deg.		103 deg.				104 deg.				
0'	15'	0'	15'	30'	45'	0'	15'	30'	45'	60'
09.784061	9.785578	9.787089	9.788593	9.790090	9.791580	9.793064	9.794541	9.796012	9.797476	60
784086	785603	787114	788618	790115	791605	793089	794566	796036	797500	59
784111	785629	787139	788643	790140	791630	793114	794591	796061	797525	58
784137	785654	787164	788668	790165	791655	793138	794615	796085	797549	57
1'	16'	1'	16'	31'	46'	1'	16'	31'	46'	
9.784162	9.785679	9.787189	9.788693	9.790189	9.791680	9.793163	9.794640	9.796110	9.797573	56
784187	785704	787214	788718	790214	791704	793188	794664	796134	797598	55
784213	785729	787239	788743	790239	791729	793212	794689	796159	797622	54
784238	785755	787264	788768	790264	791754	793237	794713	796183	797646	53
2'	17'	2'	17'	32'	47'	2'	17'	32'	47'	
9.784263	9.785780	9.787290	9.788793	9.790289	9.791779	9.793262	9.794738	9.796208	9.797671	52
784289	785805	787315	788818	790314	791803	793286	794762	796232	797695	51
784314	785830	787340	788843	790339	791828	793311	794787	796256	797719	50
784339	785855	787365	788868	790364	791853	793336	794812	796281	797744	49
3'	18'	3'	18'	33'	48'	3'	18'	33'	48'	
9.784365	9.785881	9.787390	9.788893	9.790389	9.791878	9.793360	9.794836	9.796305	9.797768	48
784390	785906	787415	788918	790413	791902	793385	794861	796330	797792	47
784415	785931	787440	788943	790438	791927	793410	794885	796354	797817	46
784440	785956	787465	788968	790463	791952	793434	794910	796379	797849	45
4'	19'	4'	19'	34'	49'	4'	19'	34'	49'	
9.784466	9.785982	9.787490	9.788993	9.790488	9.791977	9.793459	9.794934	9.796403	9.797865	44
784491	786007	787515	789018	790513	792001	793483	794959	796427	797890	43
784517	786032	787541	789043	790538	792026	793508	794983	796452	797914	42
784542	786057	787566	789067	790563	792051	793533	795008	796476	797938	41
5'	20'	5'	20'	35'	50'	5'	20'	35'	50'	
9.784567	9.786082	9.787591	9.789093	9.790588	9.792076	9.793557	9.795032	9.796501	9.797962	40
784592	786107	787616	789117	790612	792100	793582	795057	796525	797987	39
784618	786133	787641	789142	790637	792125	793607	795081	796550	798011	38
784643	786158	787666	789167	790662	792150	793631	795106	796574	798035	37
6'	21'	6'	21'	36'	51'	6'	21'	36'	51'	
9.784668	9.786183	9.787691	9.789192	9.790687	9.792175	9.793656	9.795130	9.796598	9.798060	36
784694	786208	787716	789217	790712	792199	793681	795155	796623	798084	35
784719	786234	787741	789242	790737	792224	793705	795180	796647	798108	34
784744	786259	787766	789267	790761	792249	793730	795204	796672	798133	33
7'	22'	7'	22'	37'	52'	7'	22'	37'	52'	
9.784770	9.786284	9.787791	9.789292	9.790786	9.792274	9.793754	9.795229	9.796696	9.798157	32
784795	786309	787816	789317	790811	792298	793779	795253	796720	798181	31
784820	786334	787842	789342	790836	792323	793804	795278	796745	798205	30
784845	786359	787867	789367	790861	792348	793828	795302	796769	798230	29
8'	23'	8'	23'	38'	53'	8'	23'	38'	53'	
9.784871	9.786385	9.787892	9.789392	9.790886	9.792373	9.793853	9.795327	9.796794	9.798254	28
784896	786410	787917	789417	790911	792397	793878	795351	796818	798278	27
784921	786435	787942	789442	790935	792422	793902	795376	796842	798303	26
784946	786460	787967	789467	790960	792447	793927	795400	796867	798327	25
9'	24'	9'	24'	39'	54'	9'	24'	39'	54'	
9.784972	9.786485	9.787992	9.789492	9.790985	9.792472	9.793951	9.795425	9.796891	9.798351	24
784997	786510	788017	789517	791010	792496	793976	795449	796916	798375	23
785022	786536	788042	789542	791035	792521	794001	795474	796940	798400	22
785048	786561	788067	789567	791059	792546	794025	795498	796964	798424	21
10'	25'	10'	25'	40'	55'	10'	25'	40'	55'	
9.785073	9.786586	9.788092	9.789592	9.791084	9.792570	9.794050	9.795523	9.796989	9.798448	20
785098	786611	788117	789617	791109	792595	794074	795547	797013	798473	19
785124	786636	788142	789641	791131	792620	794099	795572	797037	798497	18
785149	786661	788167	789666	791159	792644	794124	795596	797062	798521	17
11'	26'	11'	26'	41'	56'	11'	26'	41'	56'	
9.785174	9.786687	9.788192	9.789691	9.791184	9.792669	9.794148	9.795621	9.797086	9.798545	16
785199	786712	788217	789716	791209	792694	794173	795645	797111	798570	15
785225	786737	788242	789741	791233	792719	794197	795669	797135	798594	14
785250	786762	788267	789766	791258	792743	794222	795694	797159	798618	13
12'	27'	12'	27'	42'	57'	12'	27'	42'	57'	
9.785275	9.786787	9.788292	9.789791	9.791283	9.792768	9.794247	9.795718	9.797184	9.798642	12
785300	786812	788317	789816	791308	792793	794271	795743	797208	798667	11
785326	786837	788343	789841	791332	792817	794296	795767	797232	798691	10
785351	786862	788367	789866	791357	792842	794320	795792	797257	798715	9
13'	28'	13'	28'	43'	58'	13'	28'	43'	58'	
9.785376	9.786888	9.788393	9.789891	9.791382	9.792867	9.794345	9.795816	9.797281	9.798739	8
785401	786913	788418	789916	791407	792891	794369	795841	797305	798764	7
785427	786938	788443	789941	791432	792916	794394	795865	797330	798788	6
785452	786963	788468	789965	791456	792941	794419	795890	797354	798812	5
14'	29'	14'	29'	44'	59'	14'	29'	44'	59'	
9.785477	9.786988	9.788493	9.789990	9.791481	9.792966	9.794443	9.795914	9.797379	9.798836	4
785502	787013	788518	790015	791506	792980	794468	795939	797403	798861	3
785528	787038	788543	790040	791531	793015	794492	795963	797427	798885	2
785553	787064	788568	790065	791556	793040	794517	795988	797452	798909	1
9.785578	9.787089	9.788593	9.790090	9.791580	9.793064	9.794541	9.796012	9.797476	9.798933	0
50"	51"	52"	53"	54"	55"	56"	57"	58"	59"	

7 HOURS.

258

17 HOURS.

	0 ^m	1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m	8 ^m	9 ^m
	105 deg.				106 deg.				107 deg.	
0	9.798933	9.800384	9.801828	9.803266	9.804697	9.806122	9.807540	9.808952	9.810357	9.8117
1	9.798958	800408	801832	803290	804721	806146	807564	808975	810381	8117
2	9.798982	800432	801876	803314	804745	806169	807587	808999	810404	8117
3	9.799006	800456	801900	803338	804769	806193	807611	809022	810428	8117
4	9.799030	9.800481	9.801924	9.803362	9.804792	9.806217	9.807635	9.809046	9.810451	9.8117
5	9.799054	800505	801948	803386	804816	806240	807658	809069	810474	8117
6	9.799079	800529	801972	803409	804840	806264	807682	809093	810498	8117
7	9.799103	800553	801996	803433	804864	806288	807705	809116	810521	8117
8	9.799127	9.800577	9.802020	9.803457	9.804885	9.806311	9.807729	9.809140	9.810544	9.8117
9	9.799151	800601	802044	803481	804911	806335	807752	809163	810568	8117
10	9.799176	800625	802068	803505	804935	806359	807776	809187	810591	8117
11	9.799200	800649	802092	803529	804959	806382	807800	809210	810614	8117
12	9.799224	9.800673	9.802116	9.803553	9.804983	9.806406	9.807823	9.809234	9.810638	9.8117
13	9.799248	800698	802140	803577	805006	806430	807847	809257	810661	8117
14	9.799272	800722	802164	803601	805030	806453	807870	809281	810684	8117
15	9.799297	800746	802188	803624	805054	806477	807894	809304	810708	8117
16	9.799321	9.800770	9.802212	9.803648	9.805078	9.806501	9.807917	9.809327	9.810731	9.8117
17	9.799345	800794	802236	803672	805102	806524	807941	809351	810755	8117
18	9.799369	800818	802260	803696	805125	806548	807964	809374	810778	8117
19	9.799393	800842	802284	803720	805149	806572	807988	809398	810801	8117
20	9.799418	9.800866	9.802308	9.803744	9.805173	9.806595	9.808012	9.809421	9.810824	9.8117
21	9.799442	800890	802332	803768	805197	806619	808035	809445	810848	8117
22	9.799466	800914	802356	803792	805220	806643	808059	809468	810871	8117
23	9.799490	800938	802380	803815	805244	806666	808082	809491	810895	8117
24	9.799514	9.800963	9.802404	9.803839	9.805268	9.806690	9.808106	9.809515	9.810918	9.8117
25	9.799539	800987	802428	803863	805292	806714	808129	809538	810942	8117
26	9.799563	801011	802452	803887	805315	806737	808153	809562	810964	8117
27	9.799587	801035	802476	803911	805339	806761	808176	809585	810988	8117
28	9.799611	9.801059	9.802500	9.803935	9.805363	9.806785	9.808200	9.809609	9.811011	9.81240
29	9.799635	801083	802524	803959	805387	806808	808223	809632	811034	81243
30	9.799660	801107	802548	803982	805410	806832	808247	809656	811058	81245
31	9.799684	801131	802572	804006	805434	806856	808270	809679	811081	8.247
32	9.799708	9.801155	9.802596	9.804030	9.805458	9.806879	9.808294	9.809702	9.811104	9.812500
33	9.799732	801179	802620	804054	805482	806903	808317	809726	811128	812523
34	9.799756	801203	802644	804078	805505	806926	808341	809749	811151	812546
35	9.799780	801227	802668	804102	805529	806949	808365	809773	811174	812570
36	9.799805	9.801251	9.802692	9.804126	9.805553	9.806974	9.808388	9.809796	9.811198	9.812593
37	9.799829	801275	802716	804150	805577	806997	808412	809819	811221	812616
38	9.799853	801300	802740	804173	805600	807021	808435	809843	811244	812639
39	9.799877	801324	802764	804197	805624	807045	808459	809866	811267	812662
40	9.799901	9.801348	9.802788	9.804221	9.805648	9.807068	9.808482	9.809890	9.811291	9.812686
41	9.799925	801372	802811	804245	805672	807092	808506	809913	811314	812709
42	9.799950	801396	802835	804269	805695	807115	808529	809936	811337	812732
43	9.799974	801420	802859	804292	805719	807139	808553	809960	811361	812755
44	9.799998	9.801444	9.802883	9.804316	9.805743	9.807163	9.808576	9.809983	9.811384	9.812778
45	9.800022	801468	802907	804340	805766	807186	808600	810007	811407	812801
46	9.800046	801492	802931	804364	805790	807210	808623	810030	811431	812825
47	9.800070	801516	802955	804388	805814	807233	808647	810053	811454	812848
48	9.800094	9.801540	9.802979	9.804412	9.805838	9.807257	9.808670	9.810077	9.811477	9.812871
49	9.800119	801564	803003	804435	805861	807281	808694	810100	811500	812894
50	9.800143	801588	803027	804459	805885	807304	808717	810124	811524	812917
51	9.800167	801612	803051	804483	805909	807328	808741	810147	811547	812941
52	9.800191	9.801636	9.803075	9.804507	9.805932	9.807351	9.808764	9.810170	9.811570	9.812964
53	9.800215	801660	803099	804531	805956	807375	808788	810194	811594	812987
54	9.800239	801684	803123	804554	805980	807399	808811	810217	811617	813010
55	9.800263	801708	803147	804578	806003	807422	808835	810241	811640	813033
56	9.800288	9.801732	9.803170	9.804602	9.806027	9.807446	9.808858	9.810264	9.811663	9.813056
57	9.800312	801756	803194	804626	806051	807469	808882	810287	811687	813080
58	9.800336	801780	803218	804650	806075	807493	808905	810311	811710	813103
59	9.800360	801804	803242	804673	806098	807517	808929	810334	811733	813126
60	9.800384	9.801828	9.803266	9.804697	9.806122	9.807540	9.808952	9.810357	9.811756	9.813149
61	59 ^m	58 ^m	57 ^m	56 ^m	55 ^m	54 ^m	53 ^m	52 ^m	51 ^m	50 ^m

10 ^m	11 ^m	12 ^m	13 ^m	14 ^m	15 ^m	16 ^m	17 ^m	18 ^m	19 ^m	
107 deg.					108 deg.					
30'	45'	0'	15'	30'	45'	0'	15'	30'	45'	
9.813149	9.814535	9.815915	9.817289	9.818656	9.820017	9.821372	9.822721	9.824063	9.825399	60
813172	814558	815938	817312	818679	820040	821394	822743	824085	825421	59
813195	814581	815961	817335	818702	820063	821417	822765	824108	825444	58
813218	814604	815984	817357	818724	820085	821440	822788	824130	825466	57
31'	46'	1'	16'	31'	46'	1'	16'	31'	46'	
9.813242	9.814628	9.816007	9.817380	9.818747	9.820108	9.821462	9.822810	9.824152	9.825488	56
813265	814651	816030	817403	818770	820130	821485	822833	824174	825510	55
813288	814674	816053	817426	818793	820153	821507	822855	824197	825532	54
813311	814697	816076	817449	818815	820176	821530	822877	824219	825554	53
2'	47'	2'	17'	32'	47'	2'	17'	32'	47'	
9.813334	9.814720	9.816099	9.817472	9.818838	9.820198	9.821552	9.822900	9.824241	9.825577	52
813357	814743	816122	817495	818861	820221	821575	822922	824264	825599	51
813381	814766	816145	817517	818884	820244	821597	822945	824286	825621	50
813404	814789	816168	817540	818906	820266	821620	822967	824308	825643	49
3'	48'	3'	18'	33'	48'	3'	18'	33'	48'	
9.813427	9.814812	9.816191	9.817563	9.818929	9.820289	9.821642	9.822990	9.824331	9.825666	48
813450	814835	816214	817586	818952	820311	821665	823012	824353	825688	47
813473	814858	816236	817609	818974	820334	821687	823034	824375	825710	46
813496	814881	816259	817631	818997	820356	821710	823057	824397	825732	45
4'	49'	4'	19'	34'	49'	4'	19'	34'	49'	
9.813519	9.814904	9.816282	9.817654	9.819020	9.820379	9.821732	9.823079	9.824420	9.825754	44
813542	814927	816305	817677	819042	820402	821755	823101	824442	825776	43
813566	814950	816328	817700	819065	820424	821777	823124	824464	825799	42
813589	814973	816351	817723	819088	820447	821800	823146	824487	825821	41
5'	50'	5'	20'	35'	50'	5'	20'	35'	50'	
9.813612	9.814996	9.816374	9.817745	9.819111	9.820470	9.821822	9.823169	9.824509	9.825843	40
813635	815019	816397	817768	819133	820492	821845	823191	824531	825865	39
813658	815042	816420	817791	819156	820515	821867	823214	824554	825887	38
813681	815065	816443	817814	819179	820537	821890	823236	824576	825910	37
6'	51'	6'	21'	36'	51'	6'	21'	36'	51'	
9.813704	9.815088	9.816465	9.817837	9.819201	9.820560	9.821912	9.823258	9.824598	9.825932	36
813727	815111	816488	817859	819224	820582	821935	823281	824620	825954	35
813751	815134	816511	817882	819247	820605	821957	823303	824643	825976	34
813774	815157	816534	817905	819270	820628	821980	823325	824665	825998	33
7'	52'	7'	22'	37'	52'	7'	22'	37'	52'	
9.813797	9.815180	9.816557	9.817928	9.819292	9.820650	9.822002	9.823348	9.824687	9.826020	32
813820	815203	816580	817950	819315	820673	822025	823370	824710	826043	31
813843	815226	816603	817973	819338	820695	822047	823393	824732	826065	30
813866	815249	816626	817996	819360	820718	822070	823415	824754	826087	29
8'	53'	8'	23'	38'	53'	8'	23'	38'	53'	
9.813889	9.815272	9.816649	9.818019	9.819383	9.820741	9.822092	9.823437	9.824776	9.826109	28
813912	815295	816671	818042	819405	820763	822115	823460	824799	826131	27
813935	815318	816694	818064	819428	820786	822137	823482	824821	826153	26
813958	815341	816717	818087	819451	820808	822159	823504	824843	826176	25
9'	54'	9'	24'	39'	54'	9'	24'	39'	54'	
9.813982	9.815364	9.816740	9.818110	9.819474	9.820831	9.822182	9.823527	9.824865	9.826198	24
814005	815387	816763	818133	819496	820853	822204	823549	824888	826220	23
814028	815410	816786	818156	819519	820876	822227	823571	824909	826242	22
814051	815433	816809	818178	819542	820899	822249	823594	824932	826264	21
10'	55'	10'	25'	40'	55'	10'	25'	40'	55'	
9.814074	9.815456	9.816832	9.818201	9.819564	9.820921	9.822272	9.823616	9.824954	9.826286	20
814097	815479	816855	818224	819587	820944	822294	823638	824977	826308	19
814120	815502	816877	818247	819609	820966	822317	823661	824999	826331	18
814143	815525	816900	818269	819632	820989	822339	823683	825021	826353	17
11'	56'	11'	26'	41'	56'	11'	26'	41'	56'	
9.814166	9.815548	9.816923	9.818292	9.819655	9.821011	9.822362	9.823706	9.825043	9.826375	16
814189	815571	816946	818315	819678	821034	822384	823728	825066	826397	15
814212	815594	816969	818338	819700	821057	822407	823750	825088	826419	14
814235	815617	816992	818360	819723	821079	822429	823773	825110	826441	13
12'	57'	12'	27'	42'	57'	12'	27'	42'	57'	
9.814259	9.815640	9.817015	9.818383	9.819746	9.821102	9.822451	9.823795	9.825132	9.826464	12
814282	815663	817037	818406	819768	821124	822474	823817	825155	826486	11
814305	815686	817060	818429	819791	821147	822496	823840	825177	826508	10
814328	815709	817083	818451	819813	821169	822519	823862	825199	826530	9
13'	58'	13'	28'	43'	58'	13'	28'	43'	58'	
9.814351	9.815732	9.817106	9.818474	9.819836	9.821192	9.822541	9.823884	9.825221	9.826552	8
814374	815755	817129	818497	819859	821214	822564	823907	825243	826574	7
814397	815778	817152	818520	819881	821237	822586	823929	825266	826596	6
814420	815800	817175	818542	819904	821259	822608	823951	825288	826618	5
14'	59'	14'	29'	44'	59'	14'	29'	44'	59'	
9.814443	9.815823	9.817198	9.818565	9.819927	9.821282	9.822631	9.823974	9.825310	9.826641	4
814466	815846	817221	818588	819949	821304	822653	823996	825332	826663	3
814489	815869	817243	818611	819972	821327	822676	824018	825355	826685	2
814512	815892	817266	818633	819995	821349	822698	824041	825377	826707	1
9.814535	9.815915	9.817289	9.818656	9.820017	9.821372	9.822721	9.824063	9.825399	9.826729	0
49 ^m	48 ^m	47 ^m	46 ^m	45 ^m	44 ^m	43 ^m	42 ^m	41 ^m	40 ^m	

	20 ^m	21 ^m	22 ^m	23 ^m	24 ^m	25 ^m	26 ^m	27 ^m	28 ^m	29 ^m
	110 deg.				111 deg.				112 deg.	
0	0' 9.826729	15' 9.828053	30' 9.829370	45' 9.830682	0' 9.831987	15' 9.833287	30' 9.834580	45' 9.835867	0' 9.837148	15' 9.8384
1	15' 826751	828075	829392	830704	832009	833308	834601	835889	837170	8384
2	30' 826773	828097	829414	830726	832031	833330	834623	835910	837191	8384
3	45' 826795	828119	829436	830747	832053	833352	834645	835931	837212	8384
4	0' 9.826817	15' 9.828141	30' 9.829458	45' 9.830769	0' 9.832074	15' 9.833373	30' 9.834666	45' 9.835953	0' 9.837234	15' 9.8384
5	15' 826840	828163	829480	830791	832096	833395	834687	835974	837255	8384
6	30' 826862	828185	829502	830813	832118	833416	834709	835996	837276	8384
7	45' 826884	828207	829524	830835	832139	833438	834731	836017	837297	8384
8	0' 9.826906	15' 9.828229	30' 9.829546	45' 9.830856	0' 9.832161	15' 9.833460	30' 9.834752	45' 9.836038	0' 9.837319	15' 9.8384
9	15' 826928	828251	829568	830878	832183	833481	834773	836060	837340	8384
10	30' 826950	828273	829590	830900	832204	833503	834795	836081	837361	8384
11	45' 826972	828295	829611	830922	832226	833524	834816	836103	837383	8384
12	0' 9.826994	15' 9.828317	30' 9.829633	45' 9.830944	0' 9.832248	15' 9.833546	30' 9.834838	45' 9.836124	0' 9.837404	15' 9.8384
13	15' 827016	828339	829655	830965	832270	833567	834859	836145	837425	8384
14	30' 827038	828361	829677	830987	832291	833589	834881	836167	837447	8384
15	45' 827060	828383	829699	831009	832313	833611	834902	836188	837468	8384
16	0' 9.827083	15' 9.828405	30' 9.829721	45' 9.831031	0' 9.832335	15' 9.833632	30' 9.834924	45' 9.836209	0' 9.837489	15' 9.8384
17	15' 827105	828427	829743	831052	832356	833654	834945	836231	837510	8384
18	30' 827127	828449	829765	831074	832378	833675	834967	836252	837532	8384
19	45' 827149	828471	829786	831096	832400	833697	834988	836274	837553	8384
20	0' 9.827171	15' 9.828493	30' 9.829808	45' 9.831118	0' 9.832421	15' 9.833719	30' 9.835010	45' 9.836295	0' 9.837574	15' 9.8384
21	15' 827193	828515	829830	831140	832443	833740	835031	836316	837595	8384
22	30' 827215	828537	829852	831161	832465	833762	835053	836338	837617	8384
23	45' 827237	828559	829874	831183	832486	833783	835074	836359	837638	8384
24	0' 9.827259	15' 9.828581	30' 9.829896	45' 9.831205	0' 9.832508	15' 9.833805	30' 9.835096	45' 9.836380	0' 9.837659	15' 9.8384
25	15' 827281	828603	829918	831227	832530	833826	835117	836402	837680	8384
26	30' 827303	828625	829940	831248	832551	833848	835139	836423	837702	8384
27	45' 827325	828646	829961	831270	832573	833869	835160	836444	837723	8384
28	0' 9.827348	15' 9.828668	30' 9.829983	45' 9.831292	0' 9.832595	15' 9.833891	30' 9.835181	45' 9.836466	0' 9.837744	15' 9.8384
29	15' 827370	828690	830005	831314	832616	833913	835203	836487	837765	8384
30	30' 827392	828712	830027	831335	832638	833934	835224	836509	837787	8384
31	45' 827414	828734	830049	831357	832659	833956	835246	836530	837808	8384
32	0' 9.827436	15' 9.828756	30' 9.830071	45' 9.831379	0' 9.832681	15' 9.833977	30' 9.835267	45' 9.836551	0' 9.837829	15' 9.8384
33	15' 827458	828778	830093	831401	832703	833999	835289	836573	837850	8384
34	30' 827480	828800	830114	831422	832724	834020	835310	836594	837872	8384
35	45' 827502	828822	830136	831444	832746	834042	835332	836615	837893	8384
36	0' 9.827524	15' 9.828844	30' 9.830158	45' 9.831466	0' 9.832768	15' 9.834063	30' 9.835353	45' 9.836637	0' 9.837914	15' 9.8384
37	15' 827546	828866	830180	831488	832789	834085	835375	836658	837935	8384
38	30' 827568	828888	830202	831509	832811	834107	835396	836679	837957	8384
39	45' 827590	828910	830224	831531	832833	834128	835417	836701	837978	8384
40	0' 9.827612	15' 9.828932	30' 9.830246	45' 9.831553	0' 9.832854	15' 9.834150	30' 9.835439	45' 9.836722	0' 9.837999	15' 9.8384
41	15' 827634	828954	830267	831575	832876	834171	835460	836743	838020	8384
42	30' 827656	828976	830289	831596	832898	834193	835482	836765	838042	8384
43	45' 827678	828998	830311	831618	832919	834214	835503	836786	838063	8384
44	0' 9.827700	15' 9.829020	30' 9.830333	45' 9.831640	0' 9.832941	15' 9.834236	30' 9.835525	45' 9.836807	0' 9.838084	15' 9.8384
45	15' 827722	829042	830355	831662	832962	834257	835546	836829	838105	8384
46	30' 827744	829064	830377	831683	832984	834279	835567	836850	838127	8384
47	45' 827766	829085	830398	831705	833006	834300	835589	836871	838148	8384
48	0' 9.827788	15' 9.829107	30' 9.830420	45' 9.831727	0' 9.833027	15' 9.834322	30' 9.835610	45' 9.836893	0' 9.838169	15' 9.8384
49	15' 827811	829129	830442	831749	833049	834343	835632	836914	838190	8384
50	30' 827833	829151	830464	831770	833071	834365	835653	836935	838211	8384
51	45' 827855	829173	830486	831792	833092	834386	835675	836957	838233	8384
52	0' 9.827877	15' 9.829195	30' 9.830507	45' 9.831814	0' 9.833114	15' 9.834408	30' 9.835696	45' 9.836978	0' 9.838254	15' 9.8384
53	15' 827899	829217	830529	831836	833135	834429	835717	836999	838275	8384
54	30' 827921	829239	830551	831857	833157	834451	835739	837021	838296	8384
55	45' 827943	829261	830573	831879	833179	834472	835760	837042	838318	8384
56	0' 9.827965	15' 9.829283	30' 9.830595	45' 9.831901	0' 9.833200	15' 9.834494	30' 9.835782	45' 9.837063	0' 9.838339	15' 9.8384
57	15' 827987	829305	830617	831922	833222	834515	835803	837084	838360	8384
58	30' 828009	829327	830638	831944	833244	834537	835824	837106	838381	8384
59	45' 828031	829349	830660	831966	833265	834558	835846	837127	838402	8384
60	0' 9.828053	15' 9.829370	30' 9.830682	45' 9.831987	0' 9.833287	15' 9.834580	30' 9.835867	45' 9.837148	0' 9.838424	15' 9.8384
	39 ^m	38 ^m	37 ^m	36 ^m	35 ^m	34 ^m	33 ^m	32 ^m	31 ^m	30 ^m

	30 ^m	31 ^m	32 ^m	33 ^m	34 ^m	35 ^m	36 ^m	37 ^m	38 ^m	39 ^m	
	112 deg.					113 deg.					
	45'	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'
839693	9.840956	9.842213	9.843164	9.844710	9.845949	9.847183	9.848410	9.849632	9.850848	60	
839714	840977	842234	843485	844731	845970	847203	848431	849653	850868	59	
839735	840998	842255	843506	844751	845999	847224	848451	849673	850889	58	
839756	841019	842276	843527	844772	846011	847244	848472	849693	850909	57	
839777	9.841040	9.842297	9.843548	9.844793	9.846032	9.847265	9.848492	9.849714	9.850929	56	
839798	841061	842318	843568	844813	846052	847285	848512	849734	850949	55	
839819	841082	842339	843589	844834	846073	847306	848533	849754	850970	54	
839840	841103	842359	843610	844855	846094	847326	848553	849774	850990	53	
39862	9.841124	9.842380	9.843631	9.844875	9.846114	9.847347	9.848574	9.849795	9.851010	52	
39883	841145	842401	843652	844896	846135	847367	848594	849815	851030	51	
39904	841166	842422	843672	844917	846155	847388	848615	849835	851050	50	
39925	841187	842443	843693	844938	846176	847408	848635	849856	851070	49	
39946	9.841208	9.842464	9.843714	9.844958	9.846196	9.847429	9.848655	9.849876	9.851091	48	
39967	841229	842485	843735	844979	846217	847449	848676	849896	851111	47	
39988	841250	842506	843756	845000	846238	847470	848696	849917	851131	46	
40009	841271	842527	843776	845020	846258	847490	848716	849937	851151	45	
40030	9.841292	9.842547	9.843797	9.845041	9.846279	9.847511	9.848737	9.849957	9.851172	44	
40051	841313	842568	843818	845062	846299	847531	848757	849977	851192	43	
40072	841334	842589	843839	845082	846321	847552	848778	849998	851212	42	
40093	841355	842610	843859	845103	846340	847572	848798	850018	851232	41	
40114	9.841376	9.842631	9.843880	9.845124	9.846361	9.847593	9.848818	9.850038	9.851252	40	
40136	841397	842652	843901	845144	846382	847613	848839	850058	851272	39	
40157	841418	842673	843922	845165	846402	847634	848859	850079	851293	38	
40178	841439	842694	843943	845186	846423	847654	848879	850099	851313	37	
40199	9.841460	9.842714	9.843963	9.845206	9.846443	9.847675	9.848900	9.850119	9.851333	36	
40220	841481	842735	843984	845227	846464	847695	848920	850140	851353	35	
40241	841501	842756	844005	845248	846485	847716	848941	850160	851373	34	
40262	841522	842777	844026	845268	846505	847736	848961	850180	851394	33	
40283	9.841543	9.842798	9.844046	9.845289	9.846526	9.847756	9.848981	9.850200	9.851414	32	
40304	841564	842819	844067	845310	846546	847777	849002	850221	851434	31	
40325	841585	842840	844088	845330	846567	847797	849022	850241	851454	30	
40346	841606	842860	844109	845351	846587	847818	849042	850261	851474	29	
40367	9.841627	9.842881	9.844129	9.845372	9.846608	9.847838	9.849063	9.850282	9.851494	28	
40388	841648	842902	844150	845392	846628	847859	849083	850302	851514	27	
40409	841669	842923	844171	845413	846649	847879	849104	850322	851535	26	
40430	841690	842944	844192	845434	846670	847900	849124	850342	851555	25	
40451	9.841711	9.842965	9.844212	9.845454	9.846690	9.847920	9.849144	9.850363	9.851575	24	
40472	841732	842986	844233	845475	846711	847941	849165	850383	851595	23	
40493	841753	843006	844254	845495	846731	847961	849185	850403	851615	22	
40515	841774	843027	844275	845516	846752	847981	849205	850423	851635	21	
40536	9.841795	9.843048	9.844295	9.845537	9.846772	9.848002	9.849226	9.850444	9.851656	20	
40557	841816	843069	844316	845557	846793	848022	849246	850464	851676	19	
40578	841837	843090	844337	845578	846813	848043	849266	850484	851696	18	
40599	841858	843111	844358	845599	846834	848063	849287	850504	851716	17	
40620	9.841879	9.843131	9.844378	9.845619	9.846854	9.848084	9.849307	9.850525	9.851736	16	
40641	841899	843152	844399	845640	846875	848104	849327	850545	851756	15	
40662	841920	843173	844420	845661	846896	848125	849348	850565	851777	14	
40683	841941	843194	844440	845681	846916	848145	849368	850585	851797	13	
40704	9.841962	9.843215	9.844461	9.845702	9.846937	9.848165	9.849388	9.850606	9.851817	12	
40725	841983	843236	844482	845722	846957	848186	849409	850626	851837	11	
40746	842004	843256	844503	845743	846978	848206	849429	850646	851857	10	
40767	842025	843277	844523	845764	846998	848227	849449	850666	851877	9	
40788	9.842046	9.843298	9.844544	9.845784	9.847019	9.848247	9.849470	9.850686	9.851897	8	
40809	842067	843319	844565	845805	847039	848268	849490	850707	851917	7	
40830	842088	843340	844586	845826	847060	848288	849510	850727	851938	6	
40851	842109	843360	844606	845846	847080	848308	849531	850747	851958	5	
40872	9.842130	9.843381	9.844627	9.845867	9.847101	9.848329	9.849551	9.850767	9.851978	4	
40893	842150	843402	844648	845887	847121	848349	849571	850788	851998	3	
40914	842171	843423	844668	845908	847142	848370	849592	850808	852018	2	
40935	842192	843444	844689	845929	847162	848390	849612	850828	852038	1	
40956	9.842213	9.843464	9.844710	9.845949	9.847183	9.848410	9.849632	9.850848	9.852058	0	
29 ^m	28 ^m	27 ^m	26 ^m	25 ^m	24 ^m	23 ^m	22 ^m	21 ^m	20 ^m		

	40 ^m	41 ^m	42 ^m	43 ^m	44 ^m	45 ^m	46 ^m	47 ^m	48 ^m
	115 deg.				116 deg.				117 d.
sec.	0'	15'	30'	45'	0'	15'	30'	45'	0'
0 0	9.852058	9.853263	9.854461	9.855654	9.856811	9.858022	9.859198	9.860367	9.861532
1 15	852078	853283	854481	855674	856861	858042	859217	860387	861551
2 30	852099	853303	854501	855694	856880	858061	859237	860406	861570
3 45	852119	853323	854521	855713	856900	858081	859256	860426	861590
4 0	9.852139	9.853343	9.854541	9.855733	9.856920	9.858101	9.859276	9.860445	9.861609
5 15	852159	853363	854561	855753	856940	858120	859295	860465	861628
6 30	852179	853383	854581	855773	856959	858140	859315	860484	861648
7 45	852199	853403	854601	855793	856979	858160	859334	860503	861667
8 0	9.852219	9.853423	9.854621	9.855813	9.856999	9.858179	9.859354	9.860523	9.861686
9 15	852239	853443	854640	855832	857018	858199	859373	860542	861706
10 30	852259	853463	854660	855852	857038	858219	859393	860562	861725
11 45	852280	853483	854680	855872	857058	858238	859412	860581	861744
12 0	9.852300	9.853503	9.854700	9.855892	9.857078	9.858258	9.859432	9.860601	9.861764
13 15	852320	853523	854720	855912	857097	858278	859452	860620	861783
14 30	852340	853543	854740	855931	857117	858297	859471	860640	861802
15 45	852360	853563	854760	855951	857137	858317	859491	860659	861822
16 0	9.852380	9.853583	9.854780	9.855971	9.857157	9.858336	9.859510	9.860679	9.861841
17 15	852400	853603	854800	855991	857176	858356	859530	860698	861860
18 30	852420	853623	854820	856011	857196	858375	859549	860717	861880
19 45	852440	853643	854839	856030	857216	858395	859569	860737	861899
20 0	9.852460	9.853663	9.854859	9.856050	9.857235	9.858415	9.859588	9.860756	9.861918
21 15	852480	853683	854879	856070	857255	858434	859608	860775	861938
22 30	852501	853703	854899	856090	857275	858454	859627	860793	861957
23 45	852521	853723	854919	856110	857294	858474	859647	860814	861976
24 0	9.852541	9.853743	9.854939	9.856129	9.857314	9.858493	9.859666	9.860834	9.861996
25 15	852561	853763	854959	856149	857334	858513	859686	860853	862015
26 30	852581	853783	854979	856169	857354	858532	859705	860873	862034
27 45	852601	853803	854999	856189	857373	858552	859725	860892	862054
28 0	9.852621	9.853823	9.855019	9.856209	9.857393	9.858571	9.859744	9.860911	9.862073
29 15	852641	853843	855038	856228	857413	858591	859764	860931	862092
30 30	852661	853863	855058	856248	857432	858611	859783	860950	862111
31 45	852681	853883	855078	856268	857452	858630	859803	860970	862131
32 0	9.852701	9.853903	9.855098	9.856288	9.857472	9.858650	9.859822	9.860989	9.862150
33 15	852721	853923	855118	856307	857492	858669	859842	861008	862169
34 30	852741	853943	855138	856327	857511	858689	859861	861028	862189
35 45	852762	853962	855158	856347	857531	858709	859881	861047	862208
36 0	9.852782	9.853983	9.855178	9.856367	9.857550	9.858728	9.859900	9.861067	9.862227
37 15	852802	854002	855197	856387	857570	858748	859920	861086	862246
38 30	852822	854022	855217	856406	857590	858767	859939	861105	862266
39 45	852842	854042	855237	856426	857609	858787	859959	861125	862285
40 0	9.852862	9.854062	9.855257	9.856446	9.857629	9.858807	9.859978	9.861144	9.862304
41 15	852882	854082	855277	856466	857649	858826	859998	861163	862324
42 30	852902	854102	855297	856485	857668	858846	860017	861183	862343
43 45	852922	854122	855317	856505	857688	858865	860037	861202	862362
44 0	9.852942	9.854142	9.855336	9.856525	9.857708	9.858885	9.860056	9.861222	9.862382
45 15	852962	854162	855356	856545	857727	858904	860075	861241	862401
46 30	852982	854182	855376	856565	857747	858924	860095	861260	862420
47 45	853002	854202	855396	856584	857767	858943	860114	861280	862440
48 0	9.853022	9.854222	9.855416	9.856604	9.857786	9.858963	9.860134	9.861299	9.862459
49 15	853042	854242	855436	856624	857806	858983	860153	861318	862478
50 30	853062	854262	855456	856644	857826	859002	860173	861338	862497
51 45	853082	854282	855475	856663	857845	859022	860192	861357	862516
52 0	9.853102	9.854302	9.855495	9.856683	9.857865	9.859041	9.860212	9.861377	9.862536
53 15	853122	854322	855515	856703	857885	859061	860231	861396	862555
54 30	853143	854342	855535	856723	857904	859080	860251	861415	862574
55 45	853163	854362	855555	856742	857924	859100	860270	861435	862594
56 0	9.853183	9.854382	9.855575	9.856762	9.857944	9.859120	9.860290	9.861454	9.862613
57 15	853203	854401	855594	856782	857963	859139	860309	861473	862632
58 30	853223	854421	855614	856801	857983	859159	860329	861493	862651
59 45	853243	854441	855634	856821	858002	859178	860348	861512	862671
60 0	9.853263	9.854461	9.855654	9.856841	9.858022	9.859198	9.860367	9.861532	9.862690
sec.	19 ^m	18 ^m	17 ^m	16 ^m	15 ^m	14 ^m	13 ^m	12 ^m	11 ^m

1 Hour.

Log. Havreines. (I)

7 Hours.

	50 ^m	51 ^m	52 ^m	53 ^m	54 ^m	55 ^m	56 ^m	57 ^m	58 ^m	59 ^m						
117 deg.						118 deg.					119 deg.					
30'	45'	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'	30'	45'			
9.863843	9.864990	9.866131	9.867267	9.868397	9.869522	9.870641	9.871754	9.872862	9.873964	9.875061	9.876154	9.877242	9.878329			
9.863862	9.865008	9.866150	9.867286	9.868416	9.869540	9.870659	9.871773	9.872880	9.873983	9.875080	9.876173	9.877261	9.878348			
9.863881	9.865028	9.866169	9.867305	9.868435	9.869559	9.870678	9.871791	9.872899	9.874001	9.875098	9.876191	9.877279	9.878366			
9.863900	9.865047	9.866188	9.867324	9.868454	9.869578	9.870697	9.871810	9.872917	9.874019	9.875116	9.876209	9.877297	9.878384			
31'	46'	1'	16'	31'	46'	1'	16'	31'	46'	1'	16'	31'	46'			
9.863919	9.865066	9.866207	9.867342	9.868472	9.869597	9.870715	9.871828	9.872936	9.874038	9.875135	9.876228	9.877316	9.878403			
9.863938	9.865085	9.866226	9.867361	9.868491	9.869615	9.870734	9.871847	9.872954	9.874056	9.875153	9.876246	9.877334	9.878421			
9.863958	9.865104	9.866245	9.867380	9.868510	9.869634	9.870752	9.871865	9.872973	9.874074	9.875171	9.876264	9.877352	9.878439			
9.863977	9.865123	9.866264	9.867399	9.868529	9.869653	9.870771	9.871884	9.872991	9.874093	9.875190	9.876282	9.877370	9.878457			
2'	47'	2'	17'	32'	47'	2'	17'	32'	47'	2'	17'	32'	47'			
9.863996	9.865142	9.866283	9.867418	9.868547	9.869671	9.870790	9.871903	9.873010	9.874111	9.875208	9.876301	9.877389	9.878476			
9.864015	9.865161	9.866302	9.867437	9.868566	9.869690	9.870808	9.871921	9.873028	9.874129	9.875226	9.876319	9.877407	9.878494			
9.864034	9.865180	9.866321	9.867456	9.868585	9.869709	9.870827	9.871939	9.873046	9.874148	9.875245	9.876338	9.877426	9.878513			
9.864053	9.865199	9.866340	9.867475	9.868604	9.869727	9.870845	9.871958	9.873065	9.874166	9.875264	9.876357	9.877445	9.878532			
3'	48'	3'	18'	33'	48'	3'	18'	33'	48'	3'	18'	33'	48'			
9.864073	9.865218	9.866359	9.867493	9.868623	9.869746	9.870864	9.871976	9.873083	9.874184	9.875283	9.876376	9.877464	9.878551			
9.864092	9.865237	9.866378	9.867512	9.868641	9.869765	9.870883	9.871995	9.873101	9.874203	9.875300	9.876395	9.877483	9.878570			
9.864111	9.865257	9.866397	9.867531	9.868660	9.869783	9.870901	9.872013	9.873120	9.874221	9.875319	9.876414	9.877502	9.878589			
9.864130	9.865276	9.866416	9.867550	9.868679	9.869802	9.870920	9.872032	9.873138	9.874239	9.875338	9.876433	9.877521	9.878608			
4'	49'	4'	19'	34'	49'	4'	19'	34'	49'	4'	19'	34'	49'			
9.864149	9.865295	9.866435	9.867569	9.868698	9.869821	9.870938	9.872050	9.873157	9.874257	9.875357	9.876452	9.877540	9.878627			
9.864168	9.865314	9.866454	9.867588	9.868716	9.869839	9.870957	9.872069	9.873175	9.874276	9.875376	9.876471	9.877559	9.878646			
9.864187	9.865333	9.866473	9.867607	9.868735	9.869858	9.870975	9.872087	9.873193	9.874294	9.875395	9.876490	9.877578	9.878665			
9.864206	9.865352	9.866492	9.867625	9.868754	9.869877	9.870994	9.872106	9.873212	9.874312	9.875413	9.876512	9.877609	9.878700			
35'	50'	5'	20'	35'	50'	5'	20'	35'	50'	5'	20'	35'	50'			
9.864226	9.865371	9.866510	9.867644	9.868773	9.869895	9.871013	9.872124	9.873230	9.874331	9.875432	9.876531	9.877630	9.878729			
9.864245	9.865390	9.866529	9.867663	9.868792	9.869914	9.871031	9.872143	9.873249	9.874349	9.875450	9.876550	9.877649	9.878748			
9.864264	9.865409	9.866548	9.867682	9.868810	9.869933	9.871050	9.872161	9.873267	9.874367	9.875469	9.876569	9.877668	9.878767			
9.864283	9.865428	9.866567	9.867701	9.868829	9.869951	9.871068	9.872180	9.873285	9.874386	9.875488	9.876588	9.877687	9.878786			
36'	51'	6'	21'	36'	51'	6'	21'	36'	51'	6'	21'	36'	51'			
9.864302	9.865447	9.866586	9.867720	9.868848	9.869970	9.871087	9.872198	9.873304	9.874404	9.875505	9.876605	9.877704	9.878803			
9.864321	9.865466	9.866605	9.867739	9.868866	9.869989	9.871105	9.872216	9.873322	9.874423	9.875524	9.876624	9.877723	9.878822			
9.864340	9.865485	9.866624	9.867757	9.868885	9.869999	9.871124	9.872233	9.873340	9.874440	9.875543	9.876643	9.877742	9.878841			
9.864359	9.865504	9.866643	9.867776	9.869004	9.870026	9.871142	9.872253	9.873359	9.874459	9.875562	9.876662	9.877761	9.878860			
37'	52'	7'	22'	37'	52'	7'	22'	37'	52'	7'	22'	37'	52'			
9.864379	9.865523	9.866662	9.867795	9.868923	9.870045	9.871161	9.872272	9.873377	9.874477	9.875581	9.876681	9.877780	9.878879			
9.864398	9.865542	9.866681	9.867814	9.868941	9.870063	9.871180	9.872290	9.873396	9.874496	9.875600	9.876700	9.877799	9.878898			
9.864417	9.865561	9.866700	9.867833	9.868960	9.870082	9.871198	9.872309	9.873414	9.874514	9.875618	9.876718	9.877817	9.878916			
9.864436	9.865580	9.866719	9.867852	9.868979	9.870100	9.871217	9.872327	9.873432	9.874532	9.875636	9.876736	9.877835	9.878934			
38'	53'	8'	23'	38'	53'	8'	23'	38'	53'	8'	23'	38'	53'			
9.864455	9.865599	9.866738	9.867870	9.868998	9.870119	9.871235	9.872346	9.873451	9.874550	9.875654	9.876754	9.877853	9.878952			
9.864474	9.865618	9.866756	9.867889	9.869016	9.870138	9.871254	9.872364	9.873469	9.874568	9.875672	9.876772	9.877871	9.878970			
9.864493	9.865637	9.866775	9.867908	9.869035	9.870157	9.871272	9.872383	9.873487	9.874587	9.875691	9.876791	9.877890	9.878989			
9.864512	9.865656	9.866794	9.867927	9.869054	9.870176	9.871291	9.872401	9.873506	9.874605	9.875709	9.876809	9.877908	9.879007			
39'	54'	9'	24'	39'	54'	9'	24'	39'	54'	9'	24'	39'	54'			
9.864532	9.865675	9.866813	9.867946	9.869073	9.870194	9.871310	9.872420	9.873524	9.874623	9.875728	9.876828	9.877927	9.879026			
9.864551	9.865694	9.866832	9.867965	9.869091	9.870212	9.871328	9.872438	9.873543	9.874642	9.875747	9.876847	9.877946	9.879045			
9.864570	9.865713	9.866851	9.867983	9.869110	9.870231	9.871347	9.872457	9.873561	9.874660	9.875765	9.876865	9.877964	9.879063			
9.864589	9.865732	9.866870	9.868002	9.869129	9.870250	9.871365	9.872475	9.873579	9.874678	9.875783	9.876883	9.877982	9.879081			
40'	55'	10'	25'	40'	55'	10'	25'	40'	55'	10'	25'	40'	55'			
9.864608	9.865751	9.866889	9.868021	9.869148	9.870268	9.871384	9.872493	9.873598	9.874697	9.875802	9.876902	9.878001	9.879100			
9.864627	9.865770	9.866908	9.868040	9.869166	9.870287	9.871402	9.872512	9.873616	9.874715	9.875820	9.876920	9.878019	9.879118			
9.864646	9.865789	9.866927	9.868059	9.869185	9.870306	9.871421	9.872530	9.873634	9.874733	9.875838	9.876938	9.878037	9.879136			
9.864665	9.865808	9.866946	9.868078	9.869204	9.870324	9.871439	9.872549	9.873653	9.874751	9.875856	9.876956	9.878055	9.879154			
41'	56'	11'	26'	41'	56'	11'	26'	41'	56'	11'	26'	41'	56'			
9.864684	9.865827	9.866965	9.868096	9.869222	9.870343	9.871458	9.872567	9.873671	9.874769	9.875874	9.876974	9.878073	9.879172			
9.864703	9.865846	9.866984	9.868115	9.869241	9.870362	9.871476	9.872586	9.873689	9.874788	9.875893	9.876993	9.878092	9.879191			
9.864723	9.865865	9.867002	9.868134	9.869260	9.870380	9.871495	9.872604	9.873708	9.874806	9.875911	9.877011	9.878110	9.879209			
9.864742	9.865884	9.867021	9.868153	9.869278	9.870399	9.871513	9.872623	9.873726	9.874824	9.875929	9.877029	9.878128	9.879227			
42'	57'	12'	27'	42'	57'	12'	27'	42'	57'	12'	27'	42'	57'			
9.864761	9.865903	9.867040	9.868172	9.869297	9.870417	9.871532	9.872641	9.873744	9.874842	9.875947	9.877047	9.878146	9.879245			
9.864780	9.865922	9.867059	9.868190	9.869316	9.870436	9.871550	9.872660	9.873763	9.874860	9.875965	9.877065	9.878164	9.879263			
9.864799	9.865941	9.867078	9.868209	9.869335	9.870455	9.871569	9.872678	9.873781	9.874879	9.875984	9.877084	9.878183	9.879282			
9.864818	9.865960	9.867097	9.868228	9.869354	9.870473	9.871588	9.872696	9.873799	9.874897	9.875999	9.877100	9.878199	9.879298			
43'	58'	13'	28'	43'	58'	13'	28'	43'	58'	13'	28'	43'	58'			
9.864837	9.865979	9.867116	9.868247	9.869372	9.870492	9.871606	9.872715	9.873818	9.874915	9.876018	9.877118	9.878217	9.879316			
9.864856	9.865998	9.867135	9.868266	9.869391	9.870510	9.871624	9.872733	9.873836	9.874933	9.876037	9.877137	9.878236	9.879335			
9.864875	9.866017	9.867154	9.868284	9.869410	9.870529	9.871643	9.872752	9.873854	9.874952	9.876056	9.877156	9.878255	9.879354			
9.864894	9.866036	9.867172	9.868303	9.869428	9.870548	9.871662	9.872770	9.873873	9.874970	9.876075	9.877175	9.878274	9.879373			
44'	59'	14'	29'	44'	59'	14										

	0 ^m	1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m	8 ^m	9 ^m
	120 deg.				121 deg.				122 deg.	
sec.	0'	15'	30'	45'	0'	15'	30'	45'	0'	15'
0	9.875061	9.876153	9.877238	9.878319	9.879394	9.880463	9.881527	9.882585	9.883639	9.884687
1	875079	876171	877256	878337	879411	880481	881545	882603	883655	884702
2	875098	876189	877274	878355	879429	880498	881562	882621	883674	884721
3	875116	876207	877292	878373	879447	880516	881580	882638	883691	884738
4	875134	876225	877311	878391	879465	880534	881598	882656	883709	884756
5	875152	876243	877329	878408	879483	880552	881615	882673	883726	884773
6	875171	876261	877347	878426	879501	880570	881633	882691	883744	884791
7	875189	876280	877365	878444	879519	880587	881651	882709	883761	884809
8	875207	876298	877383	878462	879536	880605	881668	882726	883779	884827
9	875225	876316	877401	878480	879554	880623	881686	882744	883796	884845
10	875244	876334	877419	878498	879572	880641	881704	882761	883814	884863
11	875262	876352	877437	878516	879590	880658	881721	882779	883831	884881
12	875280	876370	877455	878534	879608	880676	881739	882796	883848	884899
13	875298	876388	877473	878552	879626	880694	881757	882814	883866	884917
14	875316	876406	877491	878570	879644	880711	881774	882832	883883	884935
15	875335	876425	877509	878588	879661	880729	881792	882849	883901	884953
16	875353	876443	877527	878606	879679	880747	881810	882867	883918	884971
17	875371	876461	877545	878624	879697	880765	881827	882885	883936	884989
18	875389	876479	877563	878642	879715	880783	881845	882902	883953	885007
19	875407	876497	877581	878660	879733	880800	881863	882919	883971	885025
20	875426	876515	877599	878678	879751	880818	881880	882937	883988	885043
21	875444	876533	877617	878696	879768	880836	881898	882955	884006	885061
22	875462	876551	877635	878713	879786	880854	881916	882972	884023	885079
23	875480	876569	877653	878731	879804	880871	881933	882990	884041	885097
24	875498	876588	877671	878749	879822	880889	881951	883007	884058	885115
25	875517	876606	877689	878767	879840	880907	881969	883023	884076	885133
26	875535	876624	877707	878785	879858	880925	881986	883042	884093	885151
27	875553	876642	877725	878803	879875	880942	882004	883060	884111	885169
28	875571	876660	877743	878821	879893	880960	882022	883078	884128	885187
29	875589	876678	877761	878839	879911	880978	882039	883095	884146	885205
30	875608	876696	877779	878857	879929	880996	882057	883113	884163	885223
31	875626	876714	877797	878875	879947	881014	882074	883130	884181	885241
32	875644	876732	877815	878893	879965	881031	882092	883148	884198	885259
33	875662	876750	877833	878911	879982	881049	882110	883165	884216	885277
34	875680	876769	877851	878928	880000	881067	882127	883183	884233	885295
35	875698	876787	877869	878946	880018	881084	882145	883200	884250	885313
36	875717	876805	877887	878964	880036	881102	882163	883218	884268	885331
37	875735	876823	877905	878982	880054	881120	882180	883235	884285	885349
38	875753	876841	877923	879000	880071	881137	882198	883253	884303	885367
39	875771	876859	877941	879018	880089	881155	882216	883271	884320	885385
40	875789	876877	877959	879036	880107	881173	882233	883288	884338	885403
41	875808	876895	877977	879054	880125	881191	882251	883306	884355	885421
42	875826	876913	877995	879072	880143	881208	882268	883323	884372	885439
43	875844	876931	878013	879090	880160	881226	882286	883341	884390	885457
44	875862	876949	878031	879107	880178	881244	882303	883358	884407	885475
45	875880	876967	878049	879125	880196	881261	882321	883376	884425	885493
46	875898	876985	878067	879143	880214	881279	882339	883393	884442	885511
47	875917	877004	878085	879161	880232	881297	882357	883411	884460	885529
48	875935	877022	878103	879179	880250	881315	882374	883428	884477	885547
49	875953	877040	878121	879197	880267	881332	882392	883446	884495	885565
50	875971	877058	878139	879215	880285	881350	882409	883463	884512	885583
51	875989	877076	878157	879233	880303	881368	882427	883481	884529	885601
52	876007	877094	878175	879251	880321	881385	882445	883498	884547	885619
53	876026	877112	878193	879268	880338	881403	882462	883516	884564	885637
54	876044	877130	878211	879286	880356	881421	882480	883533	884582	885655
55	876062	877148	878229	879304	880374	881438	882497	883551	884599	885673
56	876080	877166	878247	879322	880392	881456	882515	883568	884617	885691
57	876098	877184	878265	879340	880410	881474	882533	883586	884634	885709
58	876116	877202	878283	879358	880427	881492	882550	883603	884651	885727
59	876134	877220	878301	879376	880445	881509	882568	883621	884669	885745
60	876153	877238	878319	879394	880463	881527	882585	883639	884687	885763
	59 ^m	58 ^m	57 ^m	56 ^m	55 ^m	54 ^m	53 ^m	52 ^m	51 ^m	50 ^m

	20 ^m	21 ^m	22 ^m	23 ^m	24 ^m	25 ^m	26 ^m	27 ^m	28 ^m	29 ^m
	125 deg.				126 deg.				127 deg.	
0	0	0	0	0	0	0	0	0	0	0
1	15	15	15	15	15	15	15	15	15	15
2	30	30	30	30	30	30	30	30	30	30
3	45	45	45	45	45	45	45	45	45	45
4	0	0	0	0	0	0	0	0	0	0
5	15	15	15	15	15	15	15	15	15	15
6	30	30	30	30	30	30	30	30	30	30
7	45	45	45	45	45	45	45	45	45	45
8	0	0	0	0	0	0	0	0	0	0
9	15	15	15	15	15	15	15	15	15	15
10	30	30	30	30	30	30	30	30	30	30
11	45	45	45	45	45	45	45	45	45	45
12	0	0	0	0	0	0	0	0	0	0
13	15	15	15	15	15	15	15	15	15	15
14	30	30	30	30	30	30	30	30	30	30
15	45	45	45	45	45	45	45	45	45	45
16	0	0	0	0	0	0	0	0	0	0
17	15	15	15	15	15	15	15	15	15	15
18	30	30	30	30	30	30	30	30	30	30
19	45	45	45	45	45	45	45	45	45	45
20	0	0	0	0	0	0	0	0	0	0
21	15	15	15	15	15	15	15	15	15	15
22	30	30	30	30	30	30	30	30	30	30
23	45	45	45	45	45	45	45	45	45	45
24	0	0	0	0	0	0	0	0	0	0
25	15	15	15	15	15	15	15	15	15	15
26	30	30	30	30	30	30	30	30	30	30
27	45	45	45	45	45	45	45	45	45	45
28	0	0	0	0	0	0	0	0	0	0
29	15	15	15	15	15	15	15	15	15	15
30	30	30	30	30	30	30	30	30	30	30
31	45	45	45	45	45	45	45	45	45	45
32	0	0	0	0	0	0	0	0	0	0
33	15	15	15	15	15	15	15	15	15	15
34	30	30	30	30	30	30	30	30	30	30
35	45	45	45	45	45	45	45	45	45	45
36	0	0	0	0	0	0	0	0	0	0
37	15	15	15	15	15	15	15	15	15	15
38	30	30	30	30	30	30	30	30	30	30
39	45	45	45	45	45	45	45	45	45	45
40	0	0	0	0	0	0	0	0	0	0
41	15	15	15	15	15	15	15	15	15	15
42	30	30	30	30	30	30	30	30	30	30
43	45	45	45	45	45	45	45	45	45	45
44	0	0	0	0	0	0	0	0	0	0
45	15	15	15	15	15	15	15	15	15	15
46	30	30	30	30	30	30	30	30	30	30
47	45	45	45	45	45	45	45	45	45	45
48	0	0	0	0	0	0	0	0	0	0
49	15	15	15	15	15	15	15	15	15	15
50	30	30	30	30	30	30	30	30	30	30
51	45	45	45	45	45	45	45	45	45	45
52	0	0	0	0	0	0	0	0	0	0
53	15	15	15	15	15	15	15	15	15	15
54	30	30	30	30	30	30	30	30	30	30
55	45	45	45	45	45	45	45	45	45	45
56	0	0	0	0	0	0	0	0	0	0
57	15	15	15	15	15	15	15	15	15	15
58	30	30	30	30	30	30	30	30	30	30
59	45	45	45	45	45	45	45	45	45	45
60	0	0	0	0	0	0	0	0	0	0
61	15	15	15	15	15	15	15	15	15	15
62	30	30	30	30	30	30	30	30	30	30
63	45	45	45	45	45	45	45	45	45	45
64	0	0	0	0	0	0	0	0	0	0
65	15	15	15	15	15	15	15	15	15	15
66	30	30	30	30	30	30	30	30	30	30
67	45	45	45	45	45	45	45	45	45	45
68	0	0	0	0	0	0	0	0	0	0
69	15	15	15	15	15	15	15	15	15	15
70	30	30	30	30	30	30	30	30	30	30
71	45	45	45	45	45	45	45	45	45	45
72	0	0	0	0	0	0	0	0	0	0
73	15	15	15	15	15	15	15	15	15	15
74	30	30	30	30	30	30	30	30	30	30
75	45	45	45	45	45	45	45	45	45	45
76	0	0	0	0	0	0	0	0	0	0
77	15	15	15	15	15	15	15	15	15	15
78	30	30	30	30	30	30	30	30	30	30
79	45	45	45	45	45	45	45	45	45	45
80	0	0	0	0	0	0	0	0	0	0
81	15	15	15	15	15	15	15	15	15	15
82	30	30	30	30	30	30	30	30	30	30
83	45	45	45	45	45	45	45	45	45	45
84	0	0	0	0	0	0	0	0	0	0
85	15	15	15	15	15	15	15	15	15	15
86	30	30	30	30	30	30	30	30	30	30
87	45	45	45	45	45	45	45	45	45	45
88	0	0	0	0	0	0	0	0	0	0
89	15	15	15	15	15	15	15	15	15	15
90	30	30	30	30	30	30	30	30	30	30
91	45	45	45	45	45	45	45	45	45	45
92	0	0	0	0	0	0	0	0	0	0
93	15	15	15	15	15	15	15	15	15	15
94	30	30	30	30	30	30	30	30	30	30
95	45	45	45	45	45	45	45	45	45	45
96	0	0	0	0	0	0	0	0	0	0
97	15	15	15	15	15	15	15	15	15	15
98	30	30	30	30	30	30	30	30	30	30
99	45	45	45	45	45	45	45	45	45	45
100	0	0	0	0	0	0	0	0	0	0

	30 ^m	31 ^m	32 ^m	33 ^m	34 ^m	35 ^m	36 ^m	37 ^m	38 ^m	39 ^m	
	127 deg.			128 deg.			129 deg.				
1	9.903462	9.906394	9.907320	9.908242	9.909159	9.910070	9.910976	9.911878	9.912774	9.913665	60
2	9.903477	9.906409	9.907336	9.908257	9.909174	9.910085	9.910992	9.911893	9.912789	9.913680	59
3	9.903493	9.906425	9.907351	9.908273	9.909189	9.910100	9.911007	9.911908	9.912804	9.913695	58
4	9.903508	9.906440	9.907367	9.908288	9.909204	9.910116	9.911022	9.911923	9.912819	9.913710	57
5	9.903524	9.906456	9.907382	9.908303	9.909220	9.910131	9.911037	9.911938	9.912834	9.913725	56
6	9.903539	9.906471	9.907397	9.908319	9.909235	9.910146	9.911052	9.911953	9.912849	9.913739	55
7	9.903555	9.906486	9.907413	9.908334	9.909250	9.910161	9.911067	9.911968	9.912863	9.913754	54
8	9.903571	9.906502	9.907428	9.908349	9.909265	9.910176	9.911082	9.911983	9.912878	9.913769	53
9	9.903586	9.906517	9.907444	9.908365	9.909280	9.910191	9.911097	9.911998	9.912893	9.913784	52
10	9.903602	9.906533	9.907459	9.908380	9.909296	9.910206	9.911112	9.912013	9.912908	9.913798	51
11	9.903617	9.906548	9.907474	9.908395	9.909311	9.910222	9.911127	9.912028	9.912923	9.913813	50
12	9.903633	9.906564	9.907490	9.908410	9.909326	9.910237	9.911142	9.912043	9.912938	9.913828	49
13	9.903648	9.906579	9.907505	9.908426	9.909341	9.910252	9.911157	9.912057	9.912953	9.913843	48
14	9.903664	9.906595	9.907520	9.908441	9.909357	9.910267	9.911172	9.912072	9.912968	9.913858	47
15	9.903680	9.906610	9.907536	9.908456	9.909372	9.910282	9.911187	9.912087	9.912983	9.913872	46
16	9.903695	9.906626	9.907551	9.908472	9.909387	9.910297	9.911202	9.912102	9.912997	9.913887	45
17	9.903711	9.906641	9.907567	9.908487	9.909402	9.910312	9.911217	9.912117	9.913012	9.913902	44
18	9.903726	9.906657	9.907582	9.908502	9.909417	9.910327	9.911232	9.912132	9.913027	9.913917	43
19	9.903742	9.906672	9.907597	9.908518	9.909433	9.910343	9.911247	9.912147	9.913042	9.913932	42
20	9.903757	9.906688	9.907613	9.908533	9.909448	9.910358	9.911262	9.912162	9.913057	9.913946	41
21	9.903773	9.906703	9.907628	9.908548	9.909463	9.910373	9.911277	9.912177	9.913072	9.913961	40
22	9.903788	9.906719	9.907644	9.908563	9.909478	9.910388	9.911293	9.912192	9.913087	9.913976	39
23	9.903804	9.906734	9.907659	9.908579	9.909493	9.910403	9.911308	9.912207	9.913101	9.913991	38
24	9.903819	9.906749	9.907674	9.908594	9.909509	9.910418	9.911323	9.912222	9.913116	9.914006	37
25	9.903835	9.906765	9.907690	9.908609	9.909524	9.910433	9.911338	9.912237	9.913131	9.914020	36
26	9.903851	9.906780	9.907705	9.908625	9.909539	9.910448	9.911353	9.912252	9.913146	9.914035	35
27	9.903866	9.906796	9.907720	9.908640	9.909554	9.910463	9.911368	9.912267	9.913161	9.914050	34
28	9.903882	9.906811	9.907736	9.908655	9.909569	9.910479	9.911383	9.912282	9.913176	9.914065	33
29	9.903897	9.906827	9.907751	9.908670	9.909585	9.910494	9.911398	9.912297	9.913191	9.914079	32
30	9.903913	9.906842	9.907766	9.908686	9.909600	9.910509	9.911413	9.912312	9.913206	9.914094	31
31	9.903928	9.906858	9.907782	9.908701	9.909615	9.910524	9.911428	9.912327	9.913220	9.914109	30
32	9.903944	9.906873	9.907797	9.908716	9.909630	9.910539	9.911443	9.912342	9.913235	9.914124	29
33	9.903959	9.906889	9.907813	9.908732	9.909645	9.910554	9.911458	9.912356	9.913250	9.914139	28
34	9.903975	9.906904	9.907828	9.908747	9.909661	9.910569	9.911473	9.912371	9.913265	9.914153	27
35	9.903990	9.906919	9.907843	9.908762	9.909676	9.910584	9.911488	9.912386	9.913280	9.914168	26
36	9.904006	9.906935	9.907859	9.908777	9.909691	9.910599	9.911503	9.912401	9.913295	9.914183	25
37	9.904021	9.906950	9.907874	9.908793	9.909706	9.910615	9.911518	9.912416	9.913309	9.914198	24
38	9.904037	9.906966	9.907889	9.908808	9.909721	9.910630	9.911533	9.912431	9.913324	9.914212	23
39	9.904052	9.906981	9.907905	9.908823	9.909736	9.910645	9.911548	9.912446	9.913339	9.914227	22
40	9.904068	9.906997	9.907920	9.908838	9.909752	9.910660	9.911563	9.912461	9.913354	9.914242	21
41	9.904084	9.907012	9.907935	9.908854	9.909767	9.910675	9.911578	9.912476	9.913369	9.914257	20
42	9.904099	9.907027	9.907951	9.908869	9.909782	9.910690	9.911593	9.912491	9.913384	9.914271	19
43	9.904115	9.907043	9.907966	9.908884	9.909797	9.910705	9.911608	9.912506	9.913398	9.914286	18
44	9.904130	9.907058	9.907981	9.908899	9.909812	9.910720	9.911623	9.912521	9.913413	9.914301	17
45	9.904146	9.907074	9.907997	9.908915	9.909828	9.910735	9.911638	9.912536	9.913428	9.914316	16
46	9.904161	9.907089	9.908012	9.908930	9.909843	9.910750	9.911653	9.912550	9.913443	9.914330	15
47	9.904177	9.907105	9.908027	9.908945	9.909858	9.910765	9.911668	9.912565	9.913458	9.914345	14
48	9.904192	9.907120	9.908043	9.908960	9.909873	9.910781	9.911683	9.912580	9.913473	9.914360	13
49	9.904208	9.907135	9.908058	9.908976	9.909888	9.910796	9.911698	9.912595	9.913487	9.914375	12
50	9.904223	9.907151	9.908073	9.908991	9.909903	9.910811	9.911713	9.912610	9.913502	9.914389	11
51	9.904239	9.907166	9.908089	9.909006	9.909919	9.910826	9.911728	9.912625	9.913517	9.914404	10
52	9.904254	9.907182	9.908104	9.909021	9.909934	9.910841	9.911743	9.912640	9.913532	9.914419	9
53	9.904270	9.907197	9.908119	9.909037	9.909949	9.910856	9.911758	9.912655	9.913547	9.914434	8
54	9.904285	9.907212	9.908133	9.909052	9.909964	9.910871	9.911773	9.912670	9.913562	9.914448	7
55	9.904301	9.907228	9.908150	9.909067	9.909979	9.910886	9.911788	9.912685	9.913577	9.914463	6
56	9.904316	9.907243	9.908165	9.909082	9.909994	9.910901	9.911803	9.912700	9.913591	9.914478	5
57	9.904332	9.907259	9.908181	9.909098	9.910009	9.910916	9.911818	9.912714	9.913606	9.914493	4
58	9.904347	9.907274	9.908196	9.909113	9.910025	9.910931	9.911833	9.912729	9.913621	9.914507	3
59	9.904363	9.907290	9.908211	9.909128	9.910040	9.910946	9.911848	9.912743	9.913636	9.914522	2
60	9.904378	9.907305	9.908227	9.909143	9.910055	9.910961	9.911863	9.912759	9.913650	9.914537	1
61	9.904394	9.907320	9.908242	9.909159	9.910070	9.910976	9.911878	9.912774	9.913665	9.914551	0
	29 ^m	28 ^m	27 ^m	26 ^m	25 ^m	24 ^m	23 ^m	22 ^m	21 ^m	20 ^m	

	40 ^m	41 ^m	42 ^m	43 ^m	44 ^m	45 ^m	46 ^m	47 ^m	48 ^m
	130 deg.				131 deg.				132 d
0	0 ⁰	15 ⁰	30 ⁰	45 ⁰	0 ⁰	15 ⁰	30 ⁰	45 ⁰	0 ⁰
1	9.914551	9.915433	9.916309	9.917180	9.918046	9.918907	9.919763	9.920614	9.921460
15	914556	915447	916323	917194	918060	918921	919778	920628	921474
30	914581	915462	916338	917209	918075	918936	919791	920642	921488
45	914596	915476	916352	917223	918089	918950	919806	920657	921502
1 ⁰	9.914610	9.915491	9.916367	9.917238	9.918103	9.918964	9.919820	9.920671	9.921517
15	914625	915506	916381	917252	918118	918978	919834	920685	921531
30	914640	915520	916396	917267	918132	918993	919848	920699	921545
45	914654	915535	916411	917281	918146	919007	919863	920713	921559
2 ⁰	9.914669	9.915550	9.916425	9.917295	9.918161	9.919021	9.919877	9.920727	9.921573
15	914684	915564	916440	917310	918175	919036	919891	920741	921587
30	914699	915579	916454	917324	918190	919050	919905	920756	921601
45	914713	915594	916469	917339	918204	919064	919919	920770	921615
3 ⁰	9.914728	9.915608	9.916483	9.917353	9.918218	9.919079	9.919934	9.920784	9.921629
15	914743	915623	916498	917368	918233	919093	919948	920798	921643
30	914757	915637	916512	917382	918247	919107	919962	920812	921657
45	914772	915652	916527	917397	918262	919121	919976	920826	921671
4 ⁰	9.914787	9.915667	9.916541	9.917411	9.918276	9.919136	9.919990	9.920840	9.921685
15	914802	915681	916556	917426	918290	919150	920005	920854	921699
30	914816	915696	916570	917440	918305	919164	920019	920869	921713
45	914831	915710	916585	917454	918319	919179	920033	920883	921727
5 ⁰	9.914846	9.915725	9.916600	9.917469	9.918333	9.919193	9.920047	9.920897	9.921741
15	914860	915740	916614	917483	918348	919207	920061	920911	921755
30	914875	915754	916629	917498	918362	919221	920076	920925	921769
45	914889	915769	916643	917512	918376	919236	920090	920939	921783
6 ⁰	9.914904	9.915784	9.916658	9.917527	9.918391	9.919250	9.920104	9.920953	9.921797
15	914919	915798	916672	917541	918405	919264	920118	920967	921811
30	914934	915813	916687	917556	918420	919279	920132	920981	921825
45	914949	915827	916701	917570	918434	919293	920147	920995	921839
7 ⁰	9.914963	9.915842	9.916716	9.917585	9.918448	9.919307	9.920161	9.921010	9.921854
15	914978	915857	916730	917599	918463	919321	920175	921024	921867
30	914993	915871	916745	917613	918477	919336	920189	921038	921882
45	915007	915886	916759	917628	918491	919350	920203	921052	921896
8 ⁰	9.915022	9.915900	9.916774	9.917642	9.918506	9.919364	9.920218	9.921066	9.921910
15	915037	915915	916788	917657	918520	919378	920232	921080	921924
30	915051	915930	916803	917671	918534	919393	920246	921094	921938
45	915066	915944	916817	917686	918549	919407	920260	921108	921952
9 ⁰	9.915081	9.915959	9.916832	9.917700	9.918563	9.919421	9.920274	9.921122	9.921966
15	915095	915973	916846	917714	918577	919435	920288	921136	921980
30	915110	915988	916861	917729	918592	919450	920303	921151	921994
45	915125	916003	916875	917743	918606	919464	920317	921165	922008
10 ⁰	9.915139	9.916017	9.916890	9.917758	9.918620	9.919478	9.920331	9.921179	9.922022
15	915154	916032	916904	917772	918635	919492	920345	921193	922036
30	915169	916046	916919	917787	918649	919507	920359	921207	922050
45	915183	916061	916933	917801	918663	919521	920373	921221	922064
11 ⁰	9.915198	9.916076	9.916948	9.917815	9.918678	9.919535	9.920388	9.921235	9.922078
15	915213	916090	916962	917830	918692	919549	920402	921249	922092
30	915227	916105	916977	917844	918706	919564	920416	921263	922106
45	915242	916119	916991	917859	918720	919578	920430	921277	922120
12 ⁰	9.915257	9.916134	9.917006	9.917873	9.918735	9.919592	9.920444	9.921291	9.922134
15	915271	916148	917020	917887	918749	919606	920458	921306	922148
30	915286	916163	917035	917902	918764	919621	920473	921320	922162
45	915301	916178	917049	917916	918778	919635	920487	921334	922176
13 ⁰	9.915315	9.916192	9.917064	9.917931	9.918792	9.919649	9.920501	9.921348	9.922190
15	915330	916207	917078	917945	918807	919663	920515	921362	922204
30	915345	916221	917093	917959	918821	919678	920529	921376	922218
45	915359	916236	917107	917974	918835	919692	920543	921390	922232
14 ⁰	9.915374	9.916250	9.917122	9.917988	9.918850	9.919706	9.920558	9.921404	9.922246
15	915389	916265	917136	918003	918864	919720	920572	921418	922260
30	915403	916280	917151	918017	918878	919735	920586	921432	922274
45	915418	916294	917165	918031	918893	919749	920600	921446	922287
15 ⁰	9.915433	9.916309	9.917180	9.918046	9.918907	9.919763	9.920614	9.921460	9.922302
16	915447	916323	917194	918060	918921	919778	920628	921474	922316
17	915462	916338	917209	918075	918936	919791	920642	921488	922330
18	915476	916352	917223	918089	918950	919806	920657	921502	922344
19	915491	916367	917238	918103	918964	919820	920671	921517	922358
20	915506	916381	917252	918118	918978	919834	920685	921531	922372
21	915520	916396	917267	918132	918993	919848	920699	921545	922386
22	915535	916411	917281	918146	919007	919863	920713	921559	922400
23	915550	916425	917295	918161	919021	919877	920727	921573	922414
24	915564	916440	917310	918175	919036	919891	920741	921587	922428
25	915579	916454	917324	918190	919050	919905	920756	921601	922442
26	915594	916469	917339	918204	919064	919919	920770	921615	922456
27	915608	916483	917353	918218	919079	919934	920784	921629	922470
28	915623	916498	917368	918233	919093	919948	920798	921643	922484
29	915637	916512	917382	918247	919107	919962	920812	921657	922498
30	915652	916527	917397	918262	919121	919976	920826	921671	922512
31	915667	916541	917411	918276	919136	919990	920840	921685	922526
32	915681	916556	917426	918290	919150	920005	920854	921699	922540
33	915696	916570	917440	918305	919164	920019	920869	921713	922554
34	915710	916585	917454	918319	919179	920033	920883	921727	922568
35	915725	916600	917469	918333	919193	920047	920897	921741	922582
36	915740	916614	917483	918348	919207	920061	920911	921755	922596
37	915754	916629	917498	918362	919221	920076	920925	921769	922610
38	915769	916643	917512	918376	919236	920090	920939	921783	922624
39	915784	916658	917527	918391	919250	920104	920953	921797	922638
40	915798	916672	917541	918405	919264	920118	920967	921811	922652
41	915813	916687	917556	918420	919279	920132	920981	921825	922666
42	915827	916701	917570	918434	919293	920147	920995	921839	922680
43	915842	916716	917585	918448	919307	920161	921010	921854	922694
44	915857	916730	917599	918463	919321	920175	921024	921867	922708
45	915871	916745	917613	918477	919336	920189	921038	921882	922722
46	915886	916759	917628	918491	919350	920203	921052	921896	922736
47	915900	916774	917642	918506	919364	920218	921066	921910	922750
48	915915	916788	917657	918520	919378	920232	921080	921924	922764
49	915930	916803	917671	918534	919393	920246	921094	921938	922778
50	915944	916817	917686	918549	919407	920260	921108	921952	922792
51	915959	916832	917700	918563	919421	920274	921122	921966	922806
52	915973	916846	917714	918577	919435	920288	921136	921980	922820
53	915988	916861	917729	918592	919450	920303	921151	921994	922834
54	915999	916875	917743	918606	919464	920317	921165	922008	922848
55	916013	916890	917758	918620	919478	920331	921179	922022	922862
56	916027	916904	917772	918635	919492	920345	921193	922036	922876
57	916041	916919	917787	918649	919507	920359	921207	922050	922890
58	916055	916933							

	50 ^m	51 ^m	52 ^m	53 ^m	54 ^m	55 ^m	56 ^m	57 ^m	58 ^m	59 ^m
	132 deg.			133 deg.			134 deg.			
0	9.923135	9.923969	9.924796	9.925617	9.926434	9.927245	9.928052	9.928854	9.929651	9.930443
1	9.923152	9.923983	9.924809	9.925631	9.926447	9.927259	9.928065	9.928867	9.929664	9.930456
2	9.923166	9.923997	9.924823	9.925644	9.926461	9.927272	9.928079	9.928881	9.929678	9.930470
3	9.923179	9.924011	9.924837	9.925658	9.926474	9.927286	9.928092	9.928894	9.929691	9.930483
4	9.923193	9.924024	9.924850	9.925672	9.926488	9.927299	9.928106	9.928907	9.929704	9.930496
5	9.923207	9.924038	9.924864	9.925685	9.926501	9.927313	9.928119	9.928921	9.929717	9.930509
6	9.923221	9.924052	9.924878	9.925699	9.926515	9.927326	9.928133	9.928934	9.929731	9.930522
7	9.923235	9.924066	9.924892	9.925713	9.926529	9.927340	9.928146	9.928947	9.929744	9.930535
8	9.923249	9.924080	9.924905	9.925726	9.926542	9.927353	9.928159	9.928961	9.929757	9.930549
9	9.923263	9.924094	9.924919	9.925740	9.926556	9.927367	9.928173	9.928974	9.929770	9.930562
10	9.923277	9.924107	9.924933	9.925754	9.926569	9.927380	9.928186	9.928987	9.929784	9.930575
11	9.923291	9.924121	9.924946	9.925767	9.926583	9.927394	9.928199	9.929000	9.929797	9.930588
12	9.923304	9.924135	9.924960	9.925781	9.926596	9.927407	9.928213	9.929014	9.929810	9.930601
13	9.923318	9.924149	9.924974	9.925794	9.926610	9.927420	9.928226	9.929027	9.929823	9.930614
14	9.923332	9.924162	9.924988	9.925808	9.926623	9.927434	9.928240	9.929041	9.929836	9.930627
15	9.923346	9.924176	9.925001	9.925822	9.926637	9.927447	9.928253	9.929054	9.929850	9.930641
16	9.923360	9.924190	9.925015	9.925835	9.926651	9.927461	9.928266	9.929067	9.929863	9.930654
17	9.923374	9.924204	9.925029	9.925849	9.926664	9.927474	9.928280	9.929080	9.929876	9.930667
18	9.923388	9.924218	9.925043	9.925863	9.926678	9.927488	9.928293	9.929094	9.929889	9.930680
19	9.923402	9.924231	9.925056	9.925876	9.926681	9.927501	9.928307	9.929107	9.929902	9.930693
20	9.923415	9.924245	9.925070	9.925890	9.926705	9.927515	9.928320	9.929120	9.929916	9.930706
21	9.923429	9.924259	9.925084	9.925903	9.926718	9.927528	9.928333	9.929134	9.929929	9.930719
22	9.923443	9.924273	9.925097	9.925917	9.926732	9.927542	9.928347	9.929147	9.929942	9.930733
23	9.923457	9.924286	9.925111	9.925931	9.926745	9.927555	9.928360	9.929160	9.929955	9.930746
24	9.923471	9.924300	9.925125	9.925944	9.926759	9.927569	9.928374	9.929174	9.929969	9.930759
25	9.923485	9.924314	9.925138	9.925958	9.926772	9.927582	9.928387	9.929187	9.929982	9.930772
26	9.923499	9.924328	9.925152	9.925972	9.926786	9.927596	9.928400	9.929200	9.929995	9.930785
27	9.923512	9.924342	9.925166	9.925985	9.926799	9.927609	9.928413	9.929213	9.930008	9.930798
28	9.923526	9.924355	9.925180	9.925999	9.926813	9.927622	9.928427	9.929227	9.930021	9.930811
29	9.923540	9.924369	9.925193	9.926012	9.926826	9.927636	9.928440	9.929240	9.930035	9.930824
30	9.923554	9.924383	9.925207	9.926026	9.926840	9.927649	9.928454	9.929253	9.930048	9.930838
31	9.923568	9.924397	9.925221	9.926039	9.926854	9.927663	9.928467	9.929266	9.930061	9.930851
32	9.923582	9.924411	9.925234	9.926053	9.926867	9.927676	9.928480	9.929280	9.930074	9.930864
33	9.923596	9.924424	9.925248	9.926067	9.926881	9.927690	9.928494	9.929293	9.930087	9.930877
34	9.923610	9.924438	9.925262	9.926080	9.926894	9.927703	9.928507	9.929306	9.930101	9.930890
35	9.923623	9.924452	9.925275	9.926094	9.926908	9.927716	9.928520	9.929320	9.930114	9.930903
36	9.923637	9.924466	9.925289	9.926108	9.926921	9.927730	9.928534	9.929333	9.930127	9.930916
37	9.923651	9.924479	9.925303	9.926121	9.926935	9.927743	9.928547	9.929346	9.930140	9.930929
38	9.923665	9.924493	9.925316	9.926135	9.926948	9.927757	9.928561	9.929359	9.930153	9.930943
39	9.923679	9.924507	9.925330	9.926148	9.926962	9.927770	9.928574	9.929373	9.930167	9.930956
40	9.923693	9.924521	9.925344	9.926162	9.926975	9.927784	9.928587	9.929386	9.930180	9.930969
41	9.923706	9.924534	9.925357	9.926176	9.926989	9.927797	9.928601	9.929399	9.930193	9.930983
42	9.923720	9.924548	9.925371	9.926189	9.927002	9.927811	9.928614	9.929413	9.930206	9.930995
43	9.923734	9.924562	9.925385	9.926203	9.927016	9.927824	9.928627	9.929426	9.930219	9.931009
44	9.923748	9.924576	9.925398	9.926216	9.927029	9.927837	9.928641	9.929439	9.930233	9.931021
45	9.923762	9.924589	9.925412	9.926230	9.927043	9.927851	9.928654	9.929452	9.930246	9.931035
46	9.923776	9.924603	9.925426	9.926244	9.927056	9.927864	9.928667	9.929466	9.930259	9.931047
47	9.923789	9.924617	9.925439	9.926257	9.927070	9.927878	9.928681	9.929479	9.930272	9.931061
48	9.923803	9.924631	9.925453	9.926271	9.927083	9.927891	9.928694	9.929492	9.930285	9.931074
49	9.923817	9.924644	9.925467	9.926284	9.927097	9.927905	9.928707	9.929505	9.930298	9.931088
50	9.923831	9.924658	9.925480	9.926298	9.927110	9.927918	9.928721	9.929519	9.930312	9.931100
51	9.923845	9.924672	9.925494	9.926311	9.927124	9.927931	9.928734	9.929532	9.930325	9.931114
52	9.923859	9.924686	9.925508	9.926325	9.927137	9.927945	9.928747	9.929544	9.930338	9.931126
53	9.923872	9.924699	9.925521	9.926339	9.927151	9.927958	9.928761	9.929559	9.930351	9.931140
54	9.923886	9.924713	9.925535	9.926352	9.927164	9.927972	9.928774	9.929572	9.930364	9.931152
55	9.923900	9.924727	9.925549	9.926366	9.927178	9.927985	9.928787	9.929585	9.930377	9.931166
56	9.923914	9.924741	9.925562	9.926379	9.927191	9.927999	9.928801	9.929598	9.930391	9.931178
57	9.923928	9.924754	9.925576	9.926393	9.927205	9.928012	9.928814	9.929612	9.930404	9.931192
58	9.923942	9.924768	9.925590	9.926407	9.927218	9.928025	9.928827	9.929625	9.930417	9.931205
59	9.923955	9.924782	9.925603	9.926420	9.927232	9.928039	9.928841	9.929639	9.930430	9.931219
60	9.923969	9.924796	9.925617	9.926434	9.927245	9.928052	9.928854	9.929651	9.930443	9.931231

Yog. Haversines. (t)

		9 ^h 0 ^m	9 ^h 4 ^m	9 ^h 8 ^m	9 ^h 12 ^m	9 ^h 16 ^m	9 ^h 20 ^m	9 ^h 24 ^m	9 ^h 28 ^m	9 ^h 32 ^m		
Time.	m	135°	136°	137°	138°	139°	140°	141°	142°	143°	Time.	m
		135°	136°	137°	138°	139°	140°	141°	142°	143°		
0	0	9.931231	9.934332	9.937356	9.940303	9.943175	9.945972	9.948693	9.951340	9.953913	0	0
0	4	931283	934383	937406	940352	943223	946018	948738	951384	953955	0	4
0	8	931335	934434	937455	940400	943270	946064	948783	951427	953998	0	8
0	12	931388	934485	937505	940449	943317	946109	948827	951471	954040	0	12
0	16	9.931440	9.934536	9.937555	9.940497	9.943364	9.946155	9.948872	9.951514	9.954082	0	16
0	20	931492	934587	937604	940546	943411	946201	948917	951557	954124	0	20
0	24	931544	934638	937654	940594	943458	946247	948961	951601	954166	0	24
0	28	931596	934688	937704	940642	943505	946293	949006	951644	954209	0	28
0	32	9.931649	9.934739	9.937753	9.940691	9.943552	9.946339	9.949050	9.951687	9.954251	0	32
0	36	931701	934790	937803	940739	943600	946385	949095	951731	954293	0	36
0	40	931753	934841	937852	940787	943647	946430	949139	951774	954335	0	40
0	44	931805	934892	937902	940836	943694	946476	949184	951817	954377	0	44
0	48	9.931857	9.934943	9.937951	9.940884	9.943741	9.946522	9.949228	9.951861	9.954419	0	48
0	52	931909	934993	938001	940932	943788	946568	949273	951904	954461	0	52
0	56	931961	935044	938050	940980	943834	946613	949317	951947	954503	0	56
1	0	932013	935095	938100	941029	943881	946659	949362	951990	954545	1	0
1	4	9.932065	9.935146	9.938150	9.941077	9.943928	9.946705	9.949406	9.952033	9.954587	1	4
1	8	932117	935196	938199	941125	943975	946750	949451	952077	954629	1	8
1	12	932169	935247	938248	941173	944022	946796	949495	952120	954671	1	12
1	16	932221	935298	938297	941221	944069	946842	949539	952163	954713	1	16
1	20	9.932273	9.935348	9.938347	9.941269	9.944116	9.946887	9.949584	9.952206	9.954754	1	20
1	24	932325	935399	938396	941317	944163	946933	949628	952249	954796	1	24
1	28	932377	935449	938445	941365	944209	946978	949672	952292	954838	1	28
1	32	932429	935500	938495	941413	944256	947024	949717	952335	954880	1	32
1	36	9.932480	9.935551	9.938544	9.941461	9.944303	9.947069	9.949761	9.952378	9.954922	1	36
1	40	932532	935601	938593	941509	944350	947115	949805	952421	954964	1	40
1	44	932584	935652	938642	941557	944396	947160	949849	952464	955005	1	44
1	48	932636	935702	938692	941605	944443	947206	949893	952507	955047	1	48
1	52	9.932687	9.935753	9.938741	9.941653	9.944490	9.947251	9.949938	9.952550	9.955083	1	52
1	56	932739	935803	938790	941701	944536	947296	949982	952593	955130	1	56
2	0	932791	935853	938839	941749	944583	947342	950026	952636	955172	2	0
2	4	932843	935904	938888	941797	944629	947387	950070	952679	955214	2	4
2	8	9.932894	9.935954	9.938937	9.941845	9.944676	9.947432	9.950114	9.952722	9.955255	2	8
2	12	932946	936004	938986	941892	944723	947478	950158	952764	955297	2	12
2	16	932997	936055	939035	941940	944769	947523	950202	952807	955339	2	16
2	20	933049	936105	939085	941988	944816	947568	950246	952850	955380	2	20
2	24	9.933101	9.936155	9.939134	9.942036	9.944862	9.947613	9.950290	9.952893	9.955422	2	24
2	28	933152	936206	939183	942083	944909	947659	950334	952936	955463	2	28
2	32	933204	936256	939232	942131	944955	947704	950378	952978	955504	2	32
2	36	933255	936306	939280	942179	945001	947749	950422	953021	955546	2	36
2	40	9.933307	9.936356	9.939329	9.942226	9.945048	9.947794	9.950466	9.953064	9.955588	2	40
2	44	933358	936406	939378	942274	945094	947839	950510	953106	955629	2	44
2	48	933410	936457	939427	942322	945141	947884	950554	953149	955671	2	48
2	52	933461	936507	939476	942369	945187	947930	950598	953192	955712	2	52
2	56	9.933512	9.936557	9.939525	9.942417	9.945233	9.947975	9.950642	9.953234	9.955753	2	56
3	0	933564	936607	939574	942464	945280	948020	950685	953277	955795	3	0
3	4	933615	936657	939622	942512	945326	948065	950729	953319	955836	3	4
3	8	933666	936707	939671	942559	945372	948110	950773	953362	955877	3	8
3	12	9.933718	9.936757	9.939720	9.942607	9.945418	9.948155	9.950817	9.953404	9.955919	3	12
3	16	933769	936807	939769	942654	945465	948200	950860	953447	955960	3	16
3	20	933820	936857	939817	942702	945511	948245	950904	953489	956001	3	20
3	24	933871	936907	939866	942749	945557	948290	950948	953532	956042	3	24
3	28	9.933923	9.936957	9.939915	9.942797	9.945603	9.948335	9.950991	9.953574	9.956084	3	28
3	32	933974	937007	939964	942844	945649	948379	951035	953617	956125	3	32
3	36	934025	937057	940012	942891	945695	948424	951079	953659	956166	3	36
3	40	934076	937107	940061	942939	945741	948469	951122	953702	956207	3	40
3	44	9.934127	9.937157	9.940109	9.942986	9.945788	9.948514	9.951166	9.953744	9.956248	3	44
3	48	934179	937206	940158	943033	945834	948559	951210	953786	956289	3	48
3	52	934230	937256	940206	943081	945880	948601	951253	953829	956331	3	52
3	56	934281	937306	940255	943128	945926	948648	951297	953871	956372	3	56
4	0	9.934332	9.937356	9.940303	9.943175	9.945972	9.948693	9.951340	9.953913	9.956413	4	0
Time.		224°	223°	222°	221°	220°	219°	218°	217°	216°	Time.	
		14 ^h 56 ^m	14 ^h 52 ^m	14 ^h 48 ^m	14 ^h 44 ^m	14 ^h 40 ^m	14 ^h 36 ^m	14 ^h 32 ^m	14 ^h 28 ^m	14 ^h 24 ^m		

Log. Haversines. (C)

Time	Arc	9 ^h 36 ^m	9 ^h 40 ^m	9 ^h 44 ^m	9 ^h 48 ^m	9 ^h 52 ^m	9 ^h 56 ^m	10 ^h 0 ^m	10 ^h 4 ^m	10 ^h 8 ^m	T.
		144°	145°	146°	147°	148°	149°	150°	151°	152°	
0	0	9.956413	9.958839	9.961193	9.963474	9.965683	9.967821	9.969887	9.971883	9.973808	60 0
1	1	956454	958879	961231	963511	965719	967856	969921	971916	973840	59 56
2	2	956495	958919	961270	963549	965756	967891	969955	971948	973871	59 52
3	3	956536	958958	961308	963586	965792	967926	969989	971981	973903	59 48
4	4	9.956577	9.958998	9.961347	9.963623	9.965828	9.967961	9.970023	9.972014	9.973934	59 44
5	5	956618	959038	961385	963661	965864	967996	970057	972046	973965	59 40
6	6	956659	959078	961424	963698	965900	968031	970090	972079	973997	59 36
7	7	956699	959117	961463	963735	965936	968066	970124	972111	974028	59 32
8	8	9.956740	9.959157	9.961501	9.963773	9.965972	9.968101	9.970158	9.972144	9.974060	59 28
9	9	956781	959197	961539	963810	966008	968136	970191	972176	974091	59 24
10	10	956822	959236	961578	963847	966045	968170	970225	972209	974122	59 20
11	11	956863	959276	961616	963884	966081	968205	970259	972241	974154	59 16
12	12	9.956904	9.959316	9.961655	9.963922	9.966117	9.968240	9.970292	9.972274	9.974185	59 12
13	13	956945	959353	961693	963959	966153	968275	970326	972306	974216	59 8
14	14	956985	959395	961731	963996	966188	968310	970360	972339	974247	59 4
15	15	957026	959434	961770	964033	966224	968344	970393	972371	974279	59 0
16	16	9.957067	9.959474	9.961808	9.964070	9.966260	9.968379	9.970427	9.972403	9.974310	59 56
17	17	957108	959513	961846	964107	966296	968414	970460	972436	974341	59 52
18	18	957148	959553	961885	964144	966332	968448	970493	972468	974372	59 48
19	19	957189	959592	961923	964181	966368	968483	970527	972500	974403	59 44
20	20	9.957230	9.959632	9.961961	9.964218	9.966404	9.968518	9.970561	9.972533	9.974434	59 40
21	21	957270	959671	961999	964255	966440	968552	970594	972565	974465	59 36
22	22	957311	959710	962037	964292	966475	968587	970628	972597	974496	59 32
23	23	957351	959750	962076	964329	966511	968622	970661	972629	974528	59 28
24	24	9.957392	9.959789	9.962114	9.964366	9.966547	9.968656	9.970694	9.972662	9.974559	59 24
25	25	957432	959828	962152	964403	966583	968691	970728	972694	974590	59 20
26	26	957473	959868	962190	964440	966618	968725	970761	972726	974621	59 16
27	27	957514	959907	962228	964477	966654	968760	970794	972758	974652	59 12
28	28	9.957554	9.959946	9.962266	9.964514	9.966690	9.968794	9.970828	9.972790	9.974683	59 8
29	29	957594	959986	962304	964551	966725	968829	970861	972822	974713	59 4
30	30	957635	960025	962342	964588	966761	968863	970894	972855	974744	59 0
31	31	957675	960064	962380	964624	966797	968898	970927	972887	974775	58 56
32	32	9.957716	9.960103	9.962418	9.964661	9.966832	9.968932	9.970961	9.972919	9.974806	58 52
33	33	957756	960142	962456	964698	966868	968966	970994	972951	974837	58 48
34	34	957797	960182	962494	964735	966903	969001	971027	972983	974868	58 44
35	35	957837	960221	962532	964771	966939	969035	971060	973015	974899	58 40
36	36	9.957877	9.960260	9.962570	9.964808	9.966974	9.969069	9.971093	9.973047	9.974930	58 36
37	37	957918	960299	962608	964845	967010	969104	971127	973079	974960	58 32
38	38	957958	960338	962646	964882	967045	969138	971160	973111	974991	58 28
39	39	957998	960377	962684	964918	967081	969172	971193	973142	975022	58 24
40	40	9.958038	9.960416	9.962722	9.964955	9.967116	9.969207	9.971226	9.973174	9.975053	58 20
41	41	958079	960455	962759	964991	967152	969241	971259	973206	975083	58 16
42	42	958119	960494	962797	965024	967187	969275	971291	973238	975114	58 12
43	43	958159	960533	962835	965065	967223	969309	971325	973270	975145	58 8
44	44	9.958199	9.960572	9.962873	9.965101	9.967258	9.969343	9.971358	9.973302	9.975175	58 4
45	45	958239	960611	962910	965138	967293	969378	971391	973334	975206	58 0
46	46	958279	960650	962948	965174	967329	969412	971424	973365	975237	57 56
47	47	958319	960689	962986	965211	967364	969446	971457	973397	975267	57 52
48	48	9.958360	9.960728	9.963023	9.965247	9.967399	9.969480	9.971490	9.973429	9.975298	57 48
49	49	958400	960767	963061	965284	967434	969514	971523	973461	975328	57 44
50	50	958440	960805	963099	965320	967470	969548	971555	973492	975359	57 40
51	51	958480	960844	963136	965356	967505	969582	971588	973524	975389	57 36
52	52	9.958520	9.960883	9.963174	9.965393	9.967540	9.969616	9.971621	9.973556	9.975420	57 32
53	53	958560	960922	963211	965429	967575	969650	971654	973587	975450	57 28
54	54	958600	960961	963249	965466	967610	969684	971687	973619	975481	57 24
55	55	958640	960999	963287	965502	967646	969718	971720	973651	975511	57 20
56	56	9.958680	9.961038	9.963324	9.965538	9.967681	9.969752	9.971752	9.973682	9.975542	57 16
57	57	958719	961077	963362	965575	967716	969786	971785	973714	975572	57 12
58	58	958759	961115	963399	965611	967751	969820	971818	973745	975602	57 8
59	59	958799	961154	963436	965647	967786	969854	971851	973777	975633	57 4
60	60	9.958839	9.961193	9.963474	9.965683	9.967821	9.969887	9.971883	9.973808	9.975663	57 0
Arc		215°	214°	213°	212°	211°	210°	209°	208°	207°	T.
Time		14 ^h 20 ^m	14 ^h 16 ^m	14 ^h 12 ^m	14 ^h 8 ^m	14 ^h 4 ^m	14 ^h 0 ^m	13 ^h 56 ^m	13 ^h 52 ^m	13 ^h 48 ^m	T.

Log. Haverina. (7)

		10 ^h 12 ^m	10 ^h 16 ^m	10 ^h 20 ^m	10 ^h 24 ^m	10 ^h 28 ^m	10 ^h 32 ^m	10 ^h 36 ^m	10 ^h 40 ^m	10 ^h
Time.	Alt.	153°	154°	155°	156°	157°	158°	159°	160°	1
0 0	0	9.975663	9.977448	9.979163	9.980809	9.982385	9.983893	9.985332	9.986703	9.9
0 4	1	9.975693	9.977477	9.979191	9.980836	9.982411	9.983918	9.985356	9.986725	9
0 8	2	9.975724	9.977506	9.979219	9.980862	9.982437	9.983942	9.985379	9.986747	9
0 12	3	9.975754	9.977535	9.979247	9.980889	9.982462	9.983967	9.985402	9.986770	9
0 16	4	9.975784	9.977564	9.979275	9.980916	9.982488	9.983991	9.985426	9.986792	9.9
0 20	5	9.975814	9.977593	9.979303	9.980943	9.982514	9.984016	9.985449	9.986814	9
0 24	6	9.975845	9.977623	9.979331	9.980970	9.982539	9.984040	9.985472	9.986836	9
0 28	7	9.975875	9.977652	9.979359	9.980996	9.982565	9.984065	9.985496	9.986858	9
0 32	8	9.975905	9.977681	9.979386	9.981023	9.982590	9.984089	9.985519	9.986881	9.9
0 36	9	9.975935	9.977710	9.979414	9.981050	9.982616	9.984113	9.985542	9.986903	9
0 40	10	9.975965	9.977739	9.979442	9.981076	9.982641	9.984138	9.985565	9.986925	9
0 44	11	9.975995	9.977768	9.979470	9.981103	9.982667	9.984162	9.985589	9.986947	9
0 48	12	9.976026	9.977796	9.979498	9.981130	9.982692	9.984186	9.985612	9.986969	9.9
0 52	13	9.976056	9.977825	9.979525	9.981156	9.982718	9.984211	9.985635	9.986991	9
0 56	14	9.976086	9.977854	9.979553	9.981183	9.982743	9.984235	9.985658	9.987013	9
1 0	15	9.976116	9.977883	9.979581	9.981209	9.982769	9.984259	9.985681	9.987035	9
1 4	16	9.976146	9.977912	9.979609	9.981236	9.982794	9.984284	9.985704	9.987057	9.9
1 8	17	9.976176	9.977941	9.979636	9.981263	9.982820	9.984308	9.985728	9.987079	9
1 12	18	9.976206	9.977970	9.979664	9.981289	9.982845	9.984332	9.985751	9.987101	9
1 16	19	9.976236	9.977999	9.979692	9.981316	9.982870	9.984356	9.985774	9.987123	9
1 20	20	9.976266	9.978027	9.979719	9.981342	9.982896	9.984380	9.985797	9.987145	9.9
1 24	21	9.976296	9.978056	9.979747	9.981368	9.982921	9.984405	9.985820	9.987167	9
1 28	22	9.976326	9.978085	9.979775	9.981395	9.982946	9.984429	9.985843	9.987188	9
1 32	23	9.976355	9.978114	9.979802	9.981421	9.982972	9.984453	9.985866	9.987210	9
1 36	24	9.976385	9.978142	9.979830	9.981448	9.982997	9.984477	9.985889	9.987232	9.9
1 40	25	9.976415	9.978171	9.979857	9.981474	9.983022	9.984501	9.985912	9.987254	9
1 44	26	9.976445	9.978200	9.979885	9.981500	9.983047	9.984525	9.985935	9.987276	9
1 48	27	9.976475	9.978228	9.979912	9.981527	9.983072	9.984549	9.985958	9.987297	9
1 52	28	9.976505	9.978257	9.979940	9.981553	9.983098	9.984573	9.985980	9.987319	9.9
1 56	29	9.976534	9.978286	9.979967	9.981579	9.983123	9.984597	9.986003	9.987341	9
2 0	30	9.976564	9.978314	9.979995	9.981606	9.983148	9.984621	9.986026	9.987363	9
2 4	31	9.976594	9.978343	9.980022	9.981632	9.983173	9.984645	9.986049	9.987384	9
2 8	32	9.976624	9.978371	9.980049	9.981658	9.983198	9.984669	9.986072	9.987406	9.9
2 12	33	9.976653	9.978400	9.980077	9.981684	9.983223	9.984693	9.986095	9.987428	9
2 16	34	9.976683	9.978428	9.980104	9.981711	9.983248	9.984717	9.986117	9.987449	9
2 20	35	9.976713	9.978457	9.980131	9.981737	9.983273	9.984741	9.986140	9.987471	9
2 24	36	9.976742	9.978485	9.980159	9.981763	9.983298	9.984765	9.986163	9.987493	9.9
2 28	37	9.976772	9.978514	9.980186	9.981789	9.983323	9.984789	9.986186	9.987514	9
2 32	38	9.976802	9.978542	9.980213	9.981815	9.983348	9.984813	9.986208	9.987536	9
2 36	39	9.976831	9.978571	9.980241	9.981841	9.983373	9.984836	9.986231	9.987557	9
2 40	40	9.976861	9.978599	9.980268	9.981868	9.983398	9.984860	9.986254	9.987579	9.9
2 44	41	9.976890	9.978627	9.980295	9.981894	9.983423	9.984884	9.986276	9.987600	9
2 48	42	9.976920	9.978656	9.980322	9.981920	9.983448	9.984908	9.986299	9.987622	9
2 52	43	9.976950	9.978684	9.980350	9.981946	9.983473	9.984931	9.986321	9.987643	9
2 56	44	9.976979	9.978712	9.980377	9.981972	9.983498	9.984955	9.986344	9.987665	9.9
3 0	45	9.977008	9.978741	9.980404	9.981998	9.983523	9.984979	9.986367	9.987686	9
3 4	46	9.977038	9.978769	9.980431	9.982024	9.983547	9.985003	9.986389	9.987708	9
3 8	47	9.977067	9.978797	9.980458	9.982050	9.983572	9.985026	9.986412	9.987729	9
3 12	48	9.977096	9.978826	9.980485	9.982076	9.983597	9.985050	9.986434	9.987750	9.9
3 16	49	9.977126	9.978854	9.980512	9.982102	9.983622	9.985074	9.986457	9.987772	9
3 20	50	9.977155	9.978882	9.980539	9.982127	9.983647	9.985097	9.986479	9.987793	9
3 24	51	9.977185	9.978910	9.980566	9.982153	9.983671	9.985121	9.986502	9.987814	9
3 28	52	9.977214	9.978938	9.980593	9.982179	9.983696	9.985144	9.986524	9.987836	9.9
3 32	53	9.977243	9.978967	9.980620	9.982205	9.983721	9.985168	9.986547	9.987857	9
3 36	54	9.977273	9.978995	9.980647	9.982231	9.983745	9.985191	9.986569	9.987878	9
3 40	55	9.977302	9.979023	9.980674	9.982257	9.983770	9.985215	9.986591	9.987899	9
3 44	56	9.977331	9.979051	9.980701	9.982282	9.983795	9.985238	9.986614	9.987921	9.9
3 48	57	9.977360	9.979079	9.980728	9.982308	9.983819	9.985262	9.986636	9.987942	9
3 52	58	9.977389	9.979107	9.980755	9.982334	9.983844	9.985285	9.986658	9.987963	9
3 56	59	9.977419	9.979135	9.980781	9.982360	9.983869	9.985309	9.986681	9.987984	9
4 0	0	9.977448	9.979163	9.980809	9.982385	9.983893	9.985332	9.986703	9.988005	9.98
Time.	Alt.	206°	205°	204°	203°	202°	201°	200°	199°	19
		13 ^h 44 ^m	13 ^h 40 ^m	13 ^h 36 ^m	13 ^h 32 ^m	13 ^h 28 ^m	13 ^h 24 ^m	13 ^h 20 ^m	13 ^h 16 ^m	13 ^h

Log. Haverines. (f)

Time	Alt.	11 ^h 24 ^m	11 ^h 28 ^m	11 ^h 32 ^m	11 ^h 36 ^m	11 ^h 40 ^m	11 ^h 44 ^m	11 ^h 48 ^m	11 ^h 52 ^m	11 ^h 56 ^m	Time
		171°	172°	173°	174°	175°	176°	177°	178°	179°	
0 0 0	0	9.997318	9.997882	9.998378	9.998809	9.999173	9.999471	9.999702	9.999868	9.999967	0 0 4
0 0 4	1	997328	997890	998386	998815	999178	999475	999706	999870	999968	0 0 8
0 0 8	2	997338	997899	998394	998822	999184	999480	999709	999872	999969	0 0 12
0 0 12	3	997348	997908	998401	998829	999189	999484	999712	999874	999970	0 0 16
0 0 16	4	9.997358	9.997917	9.998409	9.998835	9.999195	9.999488	9.999715	9.999876	9.999971	0 0 20
0 0 20	5	997368	997926	998417	998842	999200	999493	999719	999878	999972	0 0 24
0 0 24	6	997378	997934	998424	998848	999205	999497	999722	999881	999973	0 0 28
0 0 28	7	997387	997943	998432	998855	999211	999501	999725	999883	999974	0 0 32
0 0 32	8	9.997397	9.997952	9.998440	9.998861	9.999216	9.999505	9.999728	9.999885	9.999975	0 0 36
0 0 36	9	997407	997960	998447	998868	999222	999510	999731	999887	999976	0 0 40
0 0 40	10	997417	997969	998455	998874	999227	999514	999734	999889	999977	0 0 44
0 0 44	11	997427	997978	998462	998881	999232	999518	999738	999891	999978	0 0 48
0 0 48	12	9.997436	9.997986	9.998470	9.998887	9.999238	9.999522	9.999741	9.999893	9.999979	0 0 52
0 0 52	13	997446	997995	998477	998893	999243	999527	999744	999895	999980	0 0 56
0 0 56	14	997456	998003	998484	998900	999248	999531	999747	999897	999981	0 0 60
1 0 0	15	997465	998012	998492	998906	999254	999535	999750	999899	999981	1 0 0
1 0 4	16	9.997475	9.998021	9.998500	9.998912	9.999259	9.999539	9.999753	9.999901	9.999982	1 0 8
1 0 8	17	997485	998029	998507	998919	999264	999543	999756	999903	999983	1 0 12
1 0 12	18	997494	998038	998514	998925	999269	999547	999759	999904	999984	1 0 16
1 0 16	19	997504	998046	998522	998931	999274	999551	999762	999906	999985	1 0 20
1 0 20	20	9.997513	9.998055	9.998529	9.998938	9.999280	9.999555	9.999765	9.999908	9.999985	1 0 24
1 0 24	21	997523	998063	998537	998944	999285	999559	999768	999910	999986	1 0 28
1 0 28	22	997533	998071	998544	998950	999290	999563	999771	999912	999987	1 0 32
1 0 32	23	997542	998080	998551	998956	999295	999567	999774	999914	999987	1 0 36
1 0 36	24	9.997552	9.998088	9.998559	9.998962	9.999300	9.999571	9.999776	9.999915	9.999988	1 0 40
1 0 40	25	997561	998097	998566	998969	999305	999575	999779	999917	999989	1 0 44
1 0 44	26	997571	998106	998573	998975	999310	999579	999782	999919	999989	1 0 48
1 0 48	27	997580	998113	998580	998981	999315	999583	999785	999921	999990	1 0 52
1 0 52	28	9.997589	9.998122	9.998588	9.998987	9.999320	9.999587	9.999788	9.999922	9.999991	1 0 56
1 0 56	29	997599	998130	998595	998993	999325	999591	999791	999924	999991	1 1 0
2 0 0	30	997608	998138	998602	998999	999330	999595	999793	999926	999992	2 0 0
2 0 4	31	997618	998147	998609	999005	999335	999599	999796	999927	999992	2 0 4
2 0 8	32	9.997627	9.998155	9.998616	9.999011	9.999340	9.999602	9.999799	9.999929	9.999993	2 0 8
2 0 12	33	997636	998163	998623	999017	999345	999606	999801	999930	999993	2 0 12
2 0 16	34	997646	998171	998630	999023	999350	999610	999804	999932	999994	2 0 16
2 0 20	35	997655	998179	998638	999029	999355	999614	999807	999934	999994	2 0 20
2 0 24	36	9.997664	9.998188	9.998645	9.999035	9.999360	9.999618	9.999809	9.999935	9.999995	2 0 24
2 0 28	37	997674	998195	998652	999041	999364	999621	999812	999937	999995	2 0 28
2 0 32	38	997683	998204	998659	999047	999369	999625	999814	999938	999996	2 0 32
2 0 36	39	997692	998212	998666	999053	999374	999629	999817	999940	999996	2 0 36
2 0 40	40	9.997701	9.998220	9.998673	9.999059	9.999379	9.999632	9.999820	9.999941	9.999996	2 0 40
2 0 44	41	997710	998228	998680	999065	999384	999636	999822	999943	999997	2 0 44
2 0 48	42	997720	998236	998687	999071	999388	999640	999825	999944	999997	2 0 48
2 0 52	43	997729	998244	998694	999076	999393	999643	999828	999946	999997	2 0 52
2 0 56	44	9.997738	9.998252	9.998701	9.999082	9.999398	9.999647	9.999830	9.999947	9.999998	2 0 56
3 0 0	45	997747	998260	998707	999088	999402	999651	999832	999948	999998	3 0 0
3 0 4	46	997756	998268	998714	999094	999407	999654	999835	999950	999998	3 0 4
3 0 8	47	997765	998276	998721	999100	999412	999658	999837	999951	999998	3 0 8
3 0 12	48	9.997774	9.998284	9.998728	9.999105	9.999416	9.999661	9.999840	9.999952	9.999999	3 0 12
3 0 16	49	997783	998292	998735	999111	999421	999665	999842	999953	999999	3 0 16
3 0 20	50	997792	998300	998742	999116	999426	999668	999845	999955	999999	3 0 20
3 0 24	51	997801	998308	998748	999123	999430	999672	999847	999956	999999	3 0 24
3 0 28	52	9.997810	9.998316	9.998755	9.999128	9.999434	9.999675	9.999849	9.999958	9.999999	3 0 28
3 0 32	53	997819	998324	998762	999134	999439	999679	999852	999959	10.000000	3 0 32
3 0 36	54	997828	998332	998769	999139	999444	999682	999854	999960	10.000000	3 0 36
3 0 40	55	997837	998340	998775	999145	999448	999686	999856	999961	10.000000	3 0 40
3 0 44	56	9.997846	9.998347	9.998782	9.999151	9.999453	9.999689	9.999859	9.999962	10.000000	3 0 44
3 0 48	57	997855	998355	998789	999156	999457	999692	999861	999964	10.000000	3 0 48
3 0 52	58	997864	998363	998796	999162	999462	999696	999863	999965	10.000000	3 0 52
3 0 56	59	997873	998371	998802	999167	999466	999699	999865	999966	10.000000	3 0 56
4 0 0	60	9.997882	9.998378	9.998809	9.999173	9.999471	9.999702	9.999868	9.999967	10.000000	4 0 0
Time	Alt.	188°	187°	186°	185°	184°	183°	182°	181°	180°	Time
		12 ^h 32 ^m	12 ^h 28 ^m	12 ^h 24 ^m	12 ^h 20 ^m	12 ^h 16 ^m	12 ^h 12 ^m	12 ^h 8 ^m	12 ^h 4 ^m	12 ^h 0 ^m	

TO FIND COLOGARITHMS OF NUMBERS.

TAKE out the logarithm from the table of logarithms, and subtract it (characteristic as well as mantissa) from 10 in the following manner: subtract every figure from 9, proceeding from left to right, to the last significant figure, which subtract from 10. Cast out as many tens in characteristic of result as there have been cologarithms used.

Thus, to find $\log. 5306 - \log. 4814 + \log. 8192 - \log. 612$, using addition only:—

log. 5306	3·724767
colog. 4814	6·317494
log. 8192	3·913390
colog. 612	7·213249
	<hr style="width: 100%;"/>
log. 14·76	1·168900

N.B. The cologarithm may thus be taken *by sight* from a table of logarithms, by persons accustomed to the use of tables, as easily as the logarithm itself, and with greater security from material error, than from a table of cologarithms. The rule for finding the characteristic of the cologarithm differing from the rule by which the characteristic of the logarithm is found, some considerable probability of serious error is involved in the use of tables of cologarithms.

In the case of negative characteristics, their subtraction from 9 being apparently an addition, it is often as well to cast out the 10 from the cologarithm at once before proceeding to sum.

Thus, to find $\log. 53·06 - \log. ·04814 + \log. 8·192 - \log. ·00612$:—

log. 53·06 = . . .	1·724767
colog. ·04814 = . . .	× 1·317494
log. 8·192 = . . .	0·913390
colog. ·00612 = . . .	× 2·213249
	<hr style="width: 100%;"/>
	6·168900

Log^s. of numbers from one to a thousand.

(u.)

no.	No.	Log.	No.	Log.	No.	Log.	No.	Log.	No.	Log.	No.	Log.
000	73	.863323	145	.161368	217	.336460	289	.460898	361	.557507	433	.636488
030	74	.869232	146	.164353	218	.338457	290	.462398	362	.558709	434	.637490
121	75	.875061	147	.167317	219	.340444	291	.463893	363	.559907	435	.638489
206	76	.880814	148	.170262	220	.342423	292	.465383	364	.561101	436	.639486
370	77	.886491	149	.173186	221	.344392	293	.466868	365	.562293	437	.640481
511	78	.892095	150	.176091	222	.346353	294	.468347	366	.563481	438	.641474
698	79	.897627	151	.178977	223	.348305	295	.469822	367	.564666	439	.642465
890	80	.903090	152	.181844	224	.350248	296	.471292	368	.565848	440	.643453
1243	81	.908485	153	.184691	225	.352163	297	.472756	369	.567026	441	.644439
1600	82	.913814	154	.187521	226	.354108	298	.474216	370	.568202	442	.645422
1993	83	.919078	155	.190332	227	.356026	299	.475671	371	.569374	443	.646404
2481	84	.924279	156	.193125	228	.357935	300	.477121	372	.570543	444	.647383
2943	85	.929419	157	.195900	229	.359835	301	.478567	373	.571709	445	.648360
3428	86	.934498	158	.198657	230	.361728	302	.480007	374	.572872	446	.649335
3911	87	.939519	159	.201397	231	.363612	303	.481443	375	.574031	447	.650308
4400	88	.944483	160	.204120	232	.365488	304	.482874	376	.575188	448	.651278
4894	89	.949390	161	.206826	233	.367356	305	.484300	377	.576341	449	.652246
5393	90	.954243	162	.209515	234	.369216	306	.485721	378	.577492	450	.653213
5894	91	.959041	163	.212188	235	.371068	307	.487138	379	.578639	451	.654177
6396	92	.963788	164	.214844	236	.372912	308	.488551	380	.579784	452	.655138
6900	93	.968483	165	.217484	237	.374748	309	.489958	381	.580925	453	.656098
7405	94	.973128	166	.220108	238	.376577	310	.491362	382	.582063	454	.657056
7911	95	.977724	167	.222716	239	.378398	311	.492760	383	.583199	455	.658011
8418	96	.982271	168	.225309	240	.380211	312	.494155	384	.584331	456	.658965
8926	97	.986772	169	.227887	241	.382017	313	.495544	385	.585461	457	.659916
9434	98	.991226	170	.230449	242	.383815	314	.496930	386	.586587	458	.660865
9943	99	.995635	171	.232996	243	.385606	315	.498311	387	.587711	459	.661813
10453	100	.000000	172	.235528	244	.387390	316	.499687	388	.588832	460	.662758
10974	101	.004321	173	.238046	245	.389166	317	.501059	389	.589950	461	.663701
11495	102	.008600	174	.240549	246	.390935	318	.502427	390	.591065	462	.664642
12016	103	.012837	175	.243038	247	.392697	319	.503791	391	.592177	463	.665581
12537	104	.017033	176	.245513	248	.394452	320	.505150	392	.593286	464	.666518
13058	105	.021189	177	.247973	249	.396199	321	.506505	393	.594393	465	.667453
13579	106	.025306	178	.250420	250	.397940	322	.507856	394	.595496	466	.668386
14100	107	.029384	179	.252853	251	.399674	323	.509203	395	.596597	467	.669317
14621	108	.033424	180	.255273	252	.401401	324	.510545	396	.597695	468	.670246
15142	109	.037427	181	.257679	253	.403121	325	.511883	397	.598791	469	.671173
15663	110	.041393	182	.260071	254	.404834	326	.513218	398	.599883	470	.672098
16184	111	.045323	183	.262451	255	.406540	327	.514548	399	.600973	471	.673021
16705	112	.049218	184	.264818	256	.408240	328	.515874	400	.602060	472	.673942
17226	113	.053078	185	.267172	257	.409933	329	.517196	401	.603144	473	.674861
17747	114	.056906	186	.269513	258	.411620	330	.518514	402	.604226	474	.675778
18268	115	.060698	187	.271842	259	.413300	331	.519828	403	.605305	475	.676694
18789	116	.064458	188	.274158	260	.414973	332	.521138	404	.606381	476	.677607
19310	117	.068186	189	.276462	261	.416641	333	.522444	405	.607455	477	.678518
19831	118	.071882	190	.278754	262	.418301	334	.523746	406	.608526	478	.679428
20352	119	.075547	191	.281033	263	.419956	335	.525045	407	.609594	479	.680336
20873	120	.079181	192	.283301	264	.421604	336	.526339	408	.610660	480	.681241
21394	121	.082785	193	.285557	265	.423246	337	.527630	409	.611723	481	.682145
21915	122	.086360	194	.287802	266	.424882	338	.528917	410	.612784	482	.683047
22436	123	.089905	195	.290035	267	.426511	339	.530200	411	.613842	483	.683947
22957	124	.093422	196	.292256	268	.428135	340	.531479	412	.614897	484	.684845
23478	125	.096910	197	.294466	269	.429752	341	.532754	413	.615950	485	.685742
24000	126	.100371	198	.296665	270	.431364	342	.534026	414	.617000	486	.686636
24521	127	.103804	199	.298853	271	.432969	343	.535294	415	.618048	487	.687529
25042	128	.107210	200	.301030	272	.434569	344	.536558	416	.619093	488	.688420
25563	129	.110590	201	.303196	273	.436163	345	.537819	417	.620136	489	.689309
26084	130	.113943	202	.305351	274	.437751	346	.539076	418	.621176	490	.690196
26605	131	.117271	203	.307496	275	.439333	347	.540329	419	.622214	491	.691081
27126	132	.120574	204	.309630	276	.440909	348	.541579	420	.623249	492	.691965
27647	133	.123852	205	.311754	277	.442480	349	.542825	421	.624282	493	.692847
28168	134	.127105	206	.313867	278	.444045	350	.544068	422	.625312	494	.693727
28689	135	.130334	207	.315970	279	.445604	351	.545307	423	.626340	495	.694605
29210	136	.133539	208	.318063	280	.447158	352	.546543	424	.627366	496	.695482
29731	137	.136721	209	.320146	281	.448706	353	.547775	425	.628389	497	.696356
30252	138	.139879	210	.322219	282	.450249	354	.549003	426	.629410	498	.697229
30773	139	.143015	211	.324282	283	.451786	355	.550228	427	.630428	499	.698101
31294	140	.146128	212	.326336	284	.453318	356	.551450	428	.631444	500	.698970
31815	141	.149219	213	.328380	285	.454845	357	.552668	429	.632457	501	.699838
32336	142	.152288	214	.330414	286	.456366	358	.553883	430	.633468	502	.700704
32857	143	.155336	215	.332438	287	.457882	359	.555094	431	.634477	503	.701568
33378	144	.158362	216	.334454	288	.459392	360	.556303	432	.635484	504	.702431

Log^s. of numbers from one to a thousand.

(u.)

No.	Log.	No.	Log.	No.	Log.	No.	Log.	No.	Log.	No.	Log.	No.	Log.
505	.703291	576	.760422	647	.810904	718	.856124	789	.897077	860	.934498	931	.960358
506	.704151	577	.761176	648	.811575	719	.856729	790	.897627	861	.935003	932	.960916
507	.705008	578	.761928	649	.812245	720	.857333	791	.898176	862	.935601	933	.961632
508	.705864	579	.762679	650	.812913	721	.857935	792	.898725	863	.936011	934	.962047
509	.706718	580	.763428	651	.813581	722	.858537	793	.899273	864	.936514	935	.962482
510	.707570	581	.764176	652	.814248	723	.859138	794	.899821	865	.937016	936	.962917
511	.708421	582	.764923	653	.814913	724	.859739	795	.900367	866	.937518	937	.963352
512	.709270	583	.765669	654	.815578	725	.860338	796	.900913	867	.938019	938	.963787
513	.710117	584	.766413	655	.816241	726	.860937	797	.901458	868	.938520	939	.964222
514	.710963	585	.767156	656	.816904	727	.861534	798	.902003	869	.939020	940	.964657
515	.711807	586	.767898	657	.817565	728	.862131	799	.902547	870	.939519	941	.965092
516	.712650	587	.768638	658	.818226	729	.862728	800	.903090	871	.940018	942	.965527
517	.713491	588	.769377	659	.818885	730	.863323	801	.903633	872	.940516	943	.965962
518	.714330	589	.770115	660	.819544	731	.863917	802	.904174	873	.941014	944	.966397
519	.715167	590	.770852	661	.820201	732	.864511	803	.904716	874	.941511	945	.966832
520	.716003	591	.771587	662	.820858	733	.865104	804	.905256	875	.942008	946	.967267
521	.716838	592	.772322	663	.821514	734	.865696	805	.905796	876	.942504	947	.967702
522	.717671	593	.773055	664	.822168	735	.866287	806	.906335	877	.943000	948	.968137
523	.718502	594	.773786	665	.822822	736	.866878	807	.906874	878	.943495	949	.968572
524	.719331	595	.774517	666	.823474	737	.867467	808	.907411	879	.943989	950	.969007
525	.720159	596	.775246	667	.824126	738	.868056	809	.907949	880	.944483	951	.969442
526	.720986	597	.775974	668	.824776	739	.868644	810	.908485	881	.944976	952	.969877
527	.721811	598	.776701	669	.825426	740	.869232	811	.909021	882	.945469	953	.970312
528	.722634	599	.777427	670	.826075	741	.869818	812	.909556	883	.945961	954	.970747
529	.723456	600	.778151	671	.826723	742	.870404	813	.910091	884	.946452	955	.971182
530	.724276	601	.778874	672	.827369	743	.870989	814	.910624	885	.946943	956	.971617
531	.725095	602	.779596	673	.828015	744	.871573	815	.911158	886	.947434	957	.972052
532	.725912	603	.780317	674	.828660	745	.872156	816	.911690	887	.947924	958	.972487
533	.726727	604	.781037	675	.829304	746	.872739	817	.912222	888	.948413	959	.972922
534	.727541	605	.781755	676	.829947	747	.873321	818	.912753	889	.948902	960	.973357
535	.728354	606	.782473	677	.830589	748	.873902	819	.913284	890	.949390	961	.973792
536	.729165	607	.783189	678	.831230	749	.874482	820	.913814	891	.949878	962	.974227
537	.729974	608	.783904	679	.831870	750	.875061	821	.914343	892	.950365	963	.974662
538	.730782	609	.784617	680	.832509	751	.875640	822	.914872	893	.950851	964	.975097
539	.731589	610	.785330	681	.833147	752	.876218	823	.915400	894	.951338	965	.975532
540	.732394	611	.786041	682	.833784	753	.876795	824	.915927	895	.951823	966	.975967
541	.733197	612	.786751	683	.834421	754	.877371	825	.916454	896	.952308	967	.976402
542	.733999	613	.787460	684	.835056	755	.877947	826	.916980	897	.952792	968	.976837
543	.734800	614	.788168	685	.835691	756	.878522	827	.917506	898	.953276	969	.977272
544	.735599	615	.788875	686	.836324	757	.879096	828	.918030	899	.953760	970	.977707
545	.736397	616	.789581	687	.836957	758	.879669	829	.918555	900	.954243	971	.978142
546	.737193	617	.790285	688	.837588	759	.880242	830	.919078	901	.954727	972	.978577
547	.737987	618	.790988	689	.838219	760	.880814	831	.919601	902	.955210	973	.979012
548	.738781	619	.791691	690	.838849	761	.881385	832	.920123	903	.955693	974	.979447
549	.739572	620	.792392	691	.839478	762	.881955	833	.920645	904	.956176	975	.979882
550	.740363	621	.793092	692	.840106	763	.882525	834	.921166	905	.956659	976	.980317
551	.741152	622	.793790	693	.840733	764	.883093	835	.921686	906	.957142	977	.980752
552	.741939	623	.794488	694	.841359	765	.883661	836	.922206	907	.957627	978	.981187
553	.742725	624	.795185	695	.841985	766	.884229	837	.922725	908	.958110	979	.981622
554	.743510	625	.795880	696	.842609	767	.884795	838	.923244	909	.958594	980	.982057
555	.744293	626	.796574	697	.843233	768	.885361	839	.923762	910	.959077	981	.982492
556	.745075	627	.797268	698	.843855	769	.885926	840	.924279	911	.959558	982	.982927
557	.745855	628	.797960	699	.844477	770	.886491	841	.924796	912	.959995	983	.983362
558	.746634	629	.798651	700	.845098	771	.887054	842	.925312	913	.960471	984	.983797
559	.747412	630	.799341	701	.845718	772	.887617	843	.925828	914	.960946	985	.984232
560	.748188	631	.800029	702	.846337	773	.888179	844	.926343	915	.961421	986	.984667
561	.748963	632	.800717	703	.846955	774	.888741	845	.926857	916	.961895	987	.985102
562	.749736	633	.801404	704	.847573	775	.889302	846	.927370	917	.962369	988	.985537
563	.750508	634	.802089	705	.848189	776	.889866	847	.927883	918	.962843	989	.985972
564	.751279	635	.802774	706	.848805	777	.890421	848	.928396	919	.963316	990	.986407
565	.752048	636	.803457	707	.849419	778	.890980	849	.928908	920	.963788	991	.986842
566	.752816	637	.804139	708	.850033	779	.891537	850	.929419	921	.964260	992	.987277
567	.753583	638	.804821	709	.850646	780	.892095	851	.929930	922	.964731	993	.987712
568	.754348	639	.805501	710	.851258	781	.892651	852	.930440	923	.965202	994	.988147
569	.755112	640	.806180	711	.851870	782	.893207	853	.930949	924	.965672	995	.988582
570	.755875	641	.806858	712	.852480	783	.893762	854	.931458	925	.966142	996	.989017
571	.756636	642	.807535	713	.853090	784	.894316	855	.931966	926	.966611	997	.989452
572	.757396	643	.808211	714	.853698	785	.894870	856	.932474	927	.967080	998	.989887
573	.758155	644	.808886	715	.854306	786	.895423	857	.932981	928	.967548	999	.990322
574	.758912	645	.809560	716	.854913	787	.895975	858	.933487	929	.968016	1000	.990757
575	.759668	646	.810233	717	.855519	788	.896526	859	.933993	930	.968483		

Log. .000000 to .130012						No. 1000 to 1349.						(u.)					
Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.
000	1070	.029384	000	1140	.056905	000	1210	.082785	000	1280	.107210	000					
043	1	.029789	040	1	.057286	038	1	.083144	036	1	.107549	034					
086	2	.030195	081	2	.057666	076	2	.083503	071	2	.107888	067					
130	3	.030600	121	3	.058046	114	3	.083861	107	3	.108227	101					
173	4	.031004	162	4	.058426	152	4	.084219	143	4	.108565	135					
216	5	.031408	202	5	.058805	190	5	.084576	179	5	.108903	169					
259	6	.031812	242	6	.059185	228	6	.084934	214	6	.109241	203					
303	7	.032216	283	7	.059563	266	7	.085291	250	7	.109578	237					
346	8	.032619	323	8	.059942	304	8	.085647	286	8	.109916	270					
389	9	.033021	364	9	.060320	342	9	.086004	322	9	.110253	304					
000	1080	.033424	000	1150	.060698	000	1220	.086360	000	1290	.110590	000					
043	1	.033826	040	1	.061075	038	1	.086716	035	1	.110926	034					
086	2	.034227	080	2	.061452	075	2	.087071	071	2	.111262	067					
128	3	.034628	120	3	.061829	113	3	.087426	106	3	.111598	101					
171	4	.035029	160	4	.062206	150	4	.087781	142	4	.111934	134					
214	5	.035430	200	5	.062582	188	5	.088136	177	5	.112270	168					
257	6	.035830	240	6	.062958	226	6	.088490	213	6	.112605	201					
300	7	.036229	280	7	.063333	263	7	.088845	248	7	.112940	235					
343	8	.036629	321	8	.063709	301	8	.089198	284	8	.113275	268					
385	9	.037028	361	9	.064083	338	9	.089552	319	9	.113609	302					
000	1090	.037426	000	1160	.064458	000	1230	.089905	000	1300	.113943	000					
042	1	.037825	040	1	.064832	037	1	.090258	035	1	.114277	033					
085	2	.038223	079	2	.065206	075	2	.090611	070	2	.114611	067					
127	3	.038620	119	3	.065580	112	3	.090963	106	3	.114944	100					
170	4	.039017	159	4	.065953	149	4	.091315	141	4	.115278	133					
212	5	.039414	198	5	.066326	186	5	.091667	176	5	.115610	167					
254	6	.039811	238	6	.066699	224	6	.092018	211	6	.115943	200					
297	7	.040207	278	7	.067071	261	7	.092370	246	7	.116276	233					
339	8	.040602	318	8	.067443	298	8	.092721	282	8	.116608	267					
382	9	.040998	357	9	.067814	336	9	.093071	317	9	.116940	300					
000	1100	.041393	000	1170	.068186	000	1240	.093422	000	1310	.117271	000					
042	1	.041787	039	1	.068557	037	1	.093772	035	1	.117603	033					
084	2	.042182	079	2	.068928	074	2	.094122	070	2	.117934	066					
126	3	.042575	118	3	.069298	111	3	.094471	105	3	.118265	099					
168	4	.042969	157	4	.069668	148	4	.094820	140	4	.118595	132					
210	5	.043362	196	5	.070038	185	5	.095169	175	5	.118926	165					
252	6	.043755	236	6	.070407	222	6	.095518	210	6	.119256	198					
294	7	.044148	275	7	.070776	259	7	.095866	245	7	.119586	231					
336	8	.044540	314	8	.071145	296	8	.096215	280	8	.119915	264					
378	9	.044931	354	9	.071514	333	9	.096562	315	9	.120245	297					
000	1110	.045323	000	1180	.071882	000	1250	.096910	000	1320	.120574	000					
042	1	.045714	039	1	.072250	037	1	.097257	035	1	.120903	033					
083	2	.046105	078	2	.072617	073	2	.097604	069	2	.121231	066					
125	3	.046495	117	3	.072985	110	3	.097951	104	3	.121560	098					
166	4	.046885	156	4	.073352	147	4	.098297	138	4	.121888	131					
208	5	.047275	195	5	.073718	183	5	.098644	173	5	.122216	164					
250	6	.047664	234	6	.074085	220	6	.098990	208	6	.122543	197					
291	7	.048053	273	7	.074451	256	7	.099335	240	7	.122871	230					
333	8	.048442	312	8	.074816	293	8	.099681	277	8	.123198	262					
374	9	.048830	351	9	.075182	330	9	.100026	311	9	.123525	295					
000	1120	.049218	000	1190	.075547	000	1260	.100370	000	1330	.123852	000					
041	1	.049606	039	1	.075912	036	1	.100715	034	1	.124178	033					
082	2	.049993	077	2	.076276	073	2	.101059	069	2	.124504	065					
124	3	.050380	116	3	.076640	109	3	.101403	103	3	.124830	098					
165	4	.050766	154	4	.077004	145	4	.101747	137	4	.125156	130					
206	5	.051152	193	5	.077368	181	5	.102090	172	5	.125481	163					
247	6	.051538	232	6	.077731	218	6	.102434	206	6	.125806	195					
288	7	.051924	270	7	.078094	254	7	.102777	240	7	.126131	228					
330	8	.052309	309	8	.078457	290	8	.103119	275	8	.126456	260					
371	9	.052694	347	9	.078819	327	9	.103462	309	9	.126781	293					
000	1130	.053078	000	1200	.079181	000	1270	.103804	000	1340	.127105	000					
041	1	.053463	038	1	.079543	036	1	.104146	034	1	.127429	032					
082	2	.053846	077	2	.079904	072	2	.104487	068	2	.127752	065					
122	3	.054230	115	3	.080266	108	3	.104828	102	3	.128076	097					
163	4	.054613	153	4	.080626	144	4	.105169	136	4	.128399	129					
204	5	.054996	191	5	.080987	180	5	.105510	170	5	.128722	161					
245	6	.055378	230	6	.081347	216	6	.105851	204	6	.129045	194					
286	7	.055760	268	7	.081707	252	7	.106191	238	7	.129368	226					
326	8	.056142	306	8	.082067	288	8	.106531	272	8	.129690	258					
367	9	.056524	345	9	.082426	324	9	.106870	306	9	.130012	291					

Log. .130334 to .230193

No. 1350 to 1699.

(u.)

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
1350	.130334	000	1420	.152288	000	1490	.173186	000	1560	.193125	000	1630	.212111	000
1	.130655	032	1	.152594	030	1	.173478	029	1	.193403	028	1	.212441	027
2	.130977	064	2	.152900	061	2	.173769	058	2	.193681	056	2	.212771	055
3	.131298	096	3	.153205	091	3	.174060	087	3	.193959	083	3	.213101	082
4	.131619	128	4	.153510	122	4	.174351	116	4	.194237	111	4	.213431	110
5	.131939	160	5	.153815	152	5	.174641	145	5	.194514	139	5	.213761	138
6	.132260	192	6	.154119	183	6	.174932	175	6	.194792	166	6	.214091	165
7	.132580	224	7	.154424	213	7	.175222	204	7	.195069	194	7	.214421	193
8	.132900	256	8	.154728	244	8	.175512	233	8	.195346	222	8	.214751	221
9	.133219	288	9	.155032	274	9	.175802	261	9	.195623	250	9	.215081	249
1360	.133539	000	1430	.155336	000	1500	.176091	000	1570	.195900	000	1640	.214881	000
1	.133858	032	1	.155640	030	1	.176381	029	1	.196176	027	1	.215211	026
2	.134177	064	2	.155943	060	2	.176670	058	2	.196452	055	2	.215541	054
3	.134496	096	3	.156246	091	3	.176959	086	3	.196729	083	3	.215871	082
4	.134814	127	4	.156549	121	4	.177248	115	4	.197005	110	4	.216201	109
5	.135133	159	5	.156852	151	5	.177536	144	5	.197281	138	5	.216531	137
6	.135451	191	6	.157154	181	6	.177825	173	6	.197556	166	6	.216861	165
7	.135768	223	7	.157457	211	7	.178113	202	7	.197832	193	7	.217191	192
8	.136086	255	8	.157759	242	8	.178401	231	8	.198107	221	8	.217521	220
9	.136403	287	9	.158061	272	9	.178689	259	9	.198382	248	9	.217851	247
1370	.136721	000	1440	.158362	000	1510	.178977	000	1580	.198657	000	1650	.217741	000
1	.137037	032	1	.158664	030	1	.179264	029	1	.198932	027	1	.218071	026
2	.137354	063	2	.158965	060	2	.179552	057	2	.199206	055	2	.218401	054
3	.137670	094	3	.159266	090	3	.179839	086	3	.199481	082	3	.218731	081
4	.137987	126	4	.159567	120	4	.180126	115	4	.199755	110	4	.219061	109
5	.138303	158	5	.159868	150	5	.180413	144	5	.200029	137	5	.219391	136
6	.138618	189	6	.160168	180	6	.180699	172	6	.200303	164	6	.219721	163
7	.138934	221	7	.160468	210	7	.180986	201	7	.200577	192	7	.220051	191
8	.139249	252	8	.160769	240	8	.181272	230	8	.200850	219	8	.220381	218
9	.139564	284	9	.161068	270	9	.181558	258	9	.201124	247	9	.220711	246
1380	.139879	000	1450	.161368	000	1520	.181844	000	1590	.201397	000	1660	.220601	000
1	.140194	031	1	.161667	030	1	.182129	028	1	.201670	027	1	.220931	026
2	.140508	063	2	.161967	060	2	.182415	057	2	.201943	054	2	.221261	053
3	.140822	094	3	.162266	089	3	.182700	086	3	.202216	082	3	.221591	081
4	.141136	125	4	.162564	119	4	.182985	114	4	.202488	109	4	.221921	108
5	.141450	157	5	.162863	149	5	.183270	143	5	.202761	136	5	.222251	135
6	.141763	188	6	.163161	179	6	.183554	171	6	.203033	163	6	.222581	162
7	.142076	219	7	.163460	209	7	.183839	200	7	.203305	191	7	.222911	190
8	.142389	251	8	.163757	239	8	.184123	228	8	.203577	218	8	.223241	217
9	.142702	282	9	.164055	269	9	.184407	256	9	.203848	245	9	.223571	244
1390	.143015	000	1460	.164353	000	1530	.184691	000	1600	.204120	000	1670	.223461	000
1	.143327	031	1	.164650	030	1	.184975	028	1	.204391	027	1	.223791	026
2	.143639	062	2	.164947	059	2	.185259	057	2	.204662	054	2	.224121	053
3	.143951	093	3	.165244	089	3	.185542	085	3	.204933	081	3	.224451	080
4	.144263	125	4	.165541	119	4	.185825	113	4	.205204	108	4	.224781	107
5	.144574	156	5	.165838	148	5	.186108	142	5	.205475	135	5	.225111	134
6	.144885	187	6	.166134	178	6	.186391	170	6	.205745	162	6	.225441	161
7	.145196	218	7	.166430	207	7	.186674	198	7	.206016	189	7	.225771	188
8	.145507	249	8	.166726	237	8	.186956	227	8	.206286	216	8	.226101	215
9	.145818	280	9	.167022	267	9	.187239	255	9	.206556	243	9	.226431	242
1400	.146128	000	1470	.167317	000	1540	.187521	000	1610	.206826	000	1680	.226321	000
1	.146438	031	1	.167613	029	1	.187803	028	1	.207095	027	1	.226651	026
2	.146748	062	2	.167908	059	2	.188084	056	2	.207365	054	2	.226981	053
3	.147058	093	3	.168203	088	3	.188366	084	3	.207634	081	3	.227311	080
4	.147367	124	4	.168497	118	4	.188647	113	4	.207903	108	4	.227641	107
5	.147676	155	5	.168792	147	5	.188928	141	5	.208172	135	5	.227971	134
6	.147985	186	6	.169086	177	6	.189209	169	6	.208441	162	6	.228301	161
7	.148294	217	7	.169380	206	7	.189490	197	7	.208710	188	7	.228631	187
8	.148603	248	8	.169674	236	8	.189771	225	8	.208978	215	8	.228961	214
9	.148911	279	9	.169968	265	9	.190051	253	9	.209247	241	9	.229291	240
1410	.149219	000	1480	.170262	000	1550	.190332	000	1620	.209515	000	1690	.229181	000
1	.149527	031	1	.170555	029	1	.190612	028	1	.209783	027	1	.229511	026
2	.149835	061	2	.170848	058	2	.190892	056	2	.210051	054	2	.229841	053
3	.150142	092	3	.171141	088	3	.191171	084	3	.210318	080	3	.230171	079
4	.150449	123	4	.171434	117	4	.191451	112	4	.210586	107	4	.230501	106
5	.150756	154	5	.171726	146	5	.191730	140	5	.210853	134	5	.230831	133
6	.151063	184	6	.172019	175	6	.192010	168	6	.211120	161	6	.231161	160
7	.151370	215	7	.172311	204	7	.192289	196	7	.211388	187	7	.231491	186
8	.151676	246	8	.172603	234	8	.192567	224	8	.211654	214	8	.231821	213
9	.151982	277	9	.172895	263	9	.192846	252	9	.211921	240	9	.232151	240

Log. .230449 to .311542

No. 1700 to 2049.

(u.)

Part	No.	Log.	Part	No.	Log.	Part	No.	Log.	Part	No.	Log.	Part
49 000	1770	.247973	000	1840	.264818	000	1910	.281033	000	1980	.296665	000
04 025	1	.248219	025	1	.265054	023	1	.281261	023	1	.296884	022
60 051	2	.248464	049	2	.265290	047	2	.281488	045	2	.297104	044
16 076	3	.248709	074	3	.265525	070	3	.281715	068	3	.297323	066
70 102	4	.248954	098	4	.265761	094	4	.281942	091	4	.297542	088
24 127	5	.249198	123	5	.265996	117	5	.282169	113	5	.297760	109
79 153	6	.249443	147	6	.266232	141	6	.282395	136	6	.297979	131
33 178	7	.249687	172	7	.266467	164	7	.282622	159	7	.298198	153
86 204	8	.249932	196	8	.266702	188	8	.282849	181	8	.298416	175
42 229	9	.250176	220	9	.266937	211	9	.283075	204	9	.298635	197
96 000	1780	.250420	000	1850	.267172	000	1920	.283301	000	1990	.298853	000
50 025	1	.250664	024	1	.267406	023	1	.283527	023	1	.299071	022
04 051	2	.250908	049	2	.267641	047	2	.283753	045	2	.299289	044
57 076	3	.251151	073	3	.267875	070	3	.283979	068	3	.299507	065
11 101	4	.251395	097	4	.268110	094	4	.284205	090	4	.299725	087
64 127	5	.251638	121	5	.268344	117	5	.284431	113	5	.299943	109
17 152	6	.251881	146	6	.268578	141	6	.284656	135	6	.300160	131
70 177	7	.252125	171	7	.268812	164	7	.284882	158	7	.300378	153
23 202	8	.252367	195	8	.269046	188	8	.285107	180	8	.300595	174
76 228	9	.252610	219	9	.269279	211	9	.285332	203	9	.300813	196
28 000	1790	.252853	000	1860	.269513	000	1930	.285557	000	2000	.301030	000
81 025	1	.253096	024	1	.269746	023	1	.285782	022	1	.301247	022
33 050	2	.253338	048	2	.269980	047	2	.286007	045	2	.301464	043
85 076	3	.253580	073	3	.270213	070	3	.286232	067	3	.301681	065
37 101	4	.253822	097	4	.270446	093	4	.286456	089	4	.301898	087
89 126	5	.254064	121	5	.270679	116	5	.286681	112	5	.302114	108
41 151	6	.254306	145	6	.270912	140	6	.286905	134	6	.302331	130
92 176	7	.254548	170	7	.271144	163	7	.287130	157	7	.302547	152
44 202	8	.254790	194	8	.271377	186	8	.287354	179	8	.302764	173
96 227	9	.255031	218	9	.271609	210	9	.287578	202	9	.302980	195
46 000	1800	.255272	000	1870	.271842	000	1940	.287802	000	2010	.303196	000
97 025	1	.255514	024	1	.272074	023	1	.288025	022	1	.303412	022
48 050	2	.255755	048	2	.272306	046	2	.288249	045	2	.303628	043
99 075	3	.255996	072	3	.272538	070	3	.288473	067	3	.303844	065
49 100	4	.256236	096	4	.272770	093	4	.288696	089	4	.304059	086
99 125	5	.256477	120	5	.273001	116	5	.288920	112	5	.304275	108
50 150	6	.256718	144	6	.273233	139	6	.289143	134	6	.304490	129
90 175	7	.256958	168	7	.273464	162	7	.289366	156	7	.304706	151
50 200	8	.257198	192	8	.273696	186	8	.289589	178	8	.304921	172
70 225	9	.257439	216	9	.273927	209	9	.289812	201	9	.305136	194
19 000	1810	.257679	000	1880	.274158	000	1950	.290035	000	2020	.305351	000
70 025	1	.257918	024	1	.274389	023	1	.290257	022	1	.305566	021
48 050	2	.258158	048	2	.274620	046	2	.290480	044	2	.305781	043
37 075	3	.258398	072	3	.274850	069	3	.290702	067	3	.305996	064
16 100	4	.258637	096	4	.275081	092	4	.290925	089	4	.306210	086
36 124	5	.258877	120	5	.275311	115	5	.291147	111	5	.306425	107
14 149	6	.259116	144	6	.275542	138	6	.291369	133	6	.306639	129
33 174	7	.259355	167	7	.275772	161	7	.291591	156	7	.306854	150
11 199	8	.259594	192	8	.276002	184	8	.291813	178	8	.307068	172
70 223	9	.259833	215	9	.276232	207	9	.292034	200	9	.307282	193
38 000	1820	.260071	000	1890	.276462	000	1960	.292256	000	2030	.307496	000
96 025	1	.260310	024	1	.276691	023	1	.292478	022	1	.307710	021
34 050	2	.260548	048	2	.276921	046	2	.292699	044	2	.307924	043
92 074	3	.260787	071	3	.277151	069	3	.292920	066	3	.308137	064
30 099	4	.261025	095	4	.277380	092	4	.293141	088	4	.308351	085
77 124	5	.261263	119	5	.277609	115	5	.293363	110	5	.308564	107
24 149	6	.261501	143	6	.277838	138	6	.293583	133	6	.308778	128
72 174	7	.261738	167	7	.278067	161	7	.293804	155	7	.308991	149
19 198	8	.261976	191	8	.278296	183	8	.294025	177	8	.309204	171
96 222	9	.262214	214	9	.278525	206	9	.294246	199	9	.309417	192
13 000	1830	.262451	000	1900	.278754	000	1970	.294466	000	2040	.309630	000
50 025	1	.262688	024	1	.278982	023	1	.294687	022	1	.309843	021
06 049	2	.262925	047	2	.279210	045	2	.294907	044	2	.310056	043
52 074	3	.263162	071	3	.279439	068	3	.295127	066	3	.310268	064
99 098	4	.263399	095	4	.279667	091	4	.295347	088	4	.310481	085
45 123	5	.263636	118	5	.279895	114	5	.295567	110	5	.310693	106
91 148	6	.263873	142	6	.280123	137	6	.295787	132	6	.310906	127
36 173	7	.264109	166	7	.280351	160	7	.296007	154	7	.311118	148
82 197	8	.264345	190	8	.280578	182	8	.296226	176	8	.311330	170
28 221	9	.264582	213	9	.280806	205	9	.296446	198	9	.311542	191

(u) Log. .311754 to .380030 No. 2050 to 2399.														
No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
2050	.311754	000	2120	.326336	000	2190	.340444	000	2260	.354108	000	2330	.367800	000
1	.311966	021	1	.326541	020	1	.340642	020	1	.354301	019	1	.367917	019
2	.312177	042	2	.326745	041	2	.340840	040	2	.354493	038	2	.368026	038
3	.312389	063	3	.326950	061	3	.341039	059	3	.354685	058	3	.368135	058
4	.312600	084	4	.327154	082	4	.341237	079	4	.354876	077	4	.368244	077
5	.312812	106	5	.327359	102	5	.341434	099	5	.355068	096	5	.368353	096
6	.313023	127	6	.327563	123	6	.341632	119	6	.355260	115	6	.368462	115
7	.313234	148	7	.327767	143	7	.341830	139	7	.355451	134	7	.368571	134
8	.313445	169	8	.327972	164	8	.342028	158	8	.355643	154	8	.368680	154
9	.313656	190	9	.328176	184	9	.342225	178	9	.355834	173	9	.368789	173
2060	.313867	000	2130	.328380	000	2200	.342423	000	2270	.356026	000	2340	.368998	000
1	.314078	021	1	.328583	020	1	.342620	020	1	.356217	019	1	.369107	019
2	.314289	042	2	.328787	041	2	.342817	039	2	.356408	038	2	.369216	038
3	.314499	063	3	.328991	061	3	.343014	059	3	.356599	057	3	.369325	057
4	.314710	084	4	.329194	081	4	.343212	079	4	.356790	076	4	.369434	076
5	.314920	105	5	.329398	102	5	.343409	099	5	.356981	095	5	.369543	095
6	.315130	126	6	.329601	122	6	.343605	118	6	.357172	115	6	.369652	115
7	.315340	147	7	.329804	142	7	.343802	138	7	.357363	134	7	.369761	134
8	.315550	168	8	.329998	163	8	.343999	158	8	.357554	153	8	.369870	153
9	.315760	189	9	.330211	183	9	.344196	178	9	.357744	172	9	.369979	172
2070	.315970	000	2140	.330414	000	2210	.344392	000	2280	.357935	000	2350	.370090	000
1	.316180	021	1	.330617	020	1	.344589	020	1	.358125	019	1	.370199	019
2	.316390	042	2	.330819	040	2	.344785	039	2	.358316	038	2	.370308	038
3	.316599	063	3	.331022	061	3	.344981	059	3	.358506	057	3	.370417	057
4	.316809	084	4	.331225	081	4	.345178	078	4	.358696	076	4	.370526	076
5	.317018	105	5	.331427	101	5	.345374	098	5	.358886	095	5	.370635	095
6	.317227	126	6	.331630	121	6	.345570	118	6	.359076	114	6	.370744	114
7	.317436	147	7	.331832	141	7	.345766	137	7	.359266	133	7	.370853	133
8	.317645	168	8	.332034	162	8	.345962	157	8	.359456	152	8	.370962	152
9	.317854	189	9	.332236	182	9	.346157	176	9	.359646	171	9	.371071	171
2080	.318063	000	2150	.332438	000	2220	.346353	000	2290	.359835	000	2360	.371276	000
1	.318272	021	1	.332640	020	1	.346549	019	1	.360025	019	1	.371385	019
2	.318481	042	2	.332842	040	2	.346744	039	2	.360215	038	2	.371494	038
3	.318689	063	3	.333044	060	3	.346939	058	3	.360404	057	3	.371603	057
4	.318898	083	4	.333246	081	4	.347135	078	4	.360593	076	4	.371712	076
5	.319106	104	5	.333447	101	5	.347330	097	5	.360783	095	5	.371821	095
6	.319314	125	6	.333649	121	6	.347525	117	6	.360972	114	6	.371930	114
7	.319522	146	7	.333850	141	7	.347720	137	7	.361161	133	7	.372039	133
8	.319730	167	8	.334051	161	8	.347915	156	8	.361350	152	8	.372148	152
9	.319938	188	9	.334253	181	9	.348110	175	9	.361539	171	9	.372257	171
2090	.320146	000	2160	.334454	000	2230	.348305	000	2300	.361728	000	2370	.372462	000
1	.320354	021	1	.334655	020	1	.348500	019	1	.361917	019	1	.372571	019
2	.320562	041	2	.334856	040	2	.348694	039	2	.362105	038	2	.372680	038
3	.320769	062	3	.335056	060	3	.348889	058	3	.362294	056	3	.372789	056
4	.320977	083	4	.335257	080	4	.349083	078	4	.362482	075	4	.372898	075
5	.321184	104	5	.335458	100	5	.349277	097	5	.362671	094	5	.373007	094
6	.321391	125	6	.335658	120	6	.349472	117	6	.362859	113	6	.373116	113
7	.321598	145	7	.335859	140	7	.349666	137	7	.363048	132	7	.373225	132
8	.321805	166	8	.336059	160	8	.349860	156	8	.363236	151	8	.373334	151
9	.322012	187	9	.336260	180	9	.350054	175	9	.363424	170	9	.373443	170
2100	.322219	000	2170	.336460	000	2240	.350248	000	2310	.363612	000	2380	.373648	000
1	.322426	021	1	.336660	020	1	.350442	019	1	.363800	019	1	.373757	019
2	.322633	041	2	.336860	040	2	.350636	039	2	.363988	037	2	.373866	037
3	.322839	062	3	.337060	060	3	.350829	058	3	.364176	056	3	.373975	056
4	.323046	082	4	.337259	080	4	.351023	077	4	.364363	075	4	.374084	075
5	.323252	103	5	.337459	100	5	.351216	097	5	.364551	094	5	.374193	094
6	.323458	124	6	.337659	120	6	.351410	116	6	.364739	112	6	.374302	112
7	.323664	144	7	.337858	140	7	.351603	135	7	.364926	131	7	.374411	131
8	.323871	165	8	.338058	160	8	.351796	155	8	.365113	150	8	.374520	150
9	.324077	186	9	.338257	180	9	.351989	174	9	.365301	169	9	.374629	169
2110	.324282	000	2180	.338456	000	2250	.352182	000	2320	.365488	000	2390	.374834	000
1	.324488	021	1	.338656	020	1	.352375	019	1	.365675	019	1	.374943	019
2	.324694	041	2	.338855	040	2	.352568	038	2	.365862	037	2	.375052	037
3	.324899	062	3	.339054	060	3	.352761	058	3	.366049	056	3	.375161	056
4	.325105	082	4	.339253	080	4	.352954	077	4	.366236	075	4	.375270	075
5	.325310	103	5	.339451	100	5	.353146	096	5	.366423	093	5	.375379	093
6	.325516	123	6	.339650	119	6	.353339	115	6	.366610	112	6	.375488	112
7	.325721	144	7	.339849	139	7	.353532	134	7	.366796	131	7	.375597	131
8	.325926	164	8	.340047	159	8	.353724	154	8	.366983	150	8	.375706	150
9	.326131	185	9	.340246	179	9	.353916	173	9	.367169	168	9	.375815	168

Log. .380211 to .439175

No. 2400 to 2749.

(u.)

f.	Parts	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
211	000	2470	.392697	000	2540	.404834	000	2610	.416640	000	2680	.428135	000
392	018	1	.392873	018	1	.405005	017	1	.416807	017	1	.428297	016
573	036	2	.393048	035	2	.405175	034	2	.416973	033	2	.428459	032
754	055	3	.393224	053	3	.405346	051	3	.417139	050	3	.428621	048
934	073	4	.393400	070	4	.405517	068	4	.417306	066	4	.428782	065
115	091	5	.393575	088	5	.405688	085	5	.417472	083	5	.428944	081
296	109	6	.393751	106	6	.405858	102	6	.417638	100	6	.429106	097
476	127	7	.393926	123	7	.406029	119	7	.417804	116	7	.429268	113
656	145	8	.394101	141	8	.406199	136	8	.417970	133	8	.429429	129
837	163	9	.394276	158	9	.406370	153	9	.418135	149	9	.429591	145
117	000	2480	.394452	000	2550	.406540	000	2620	.418301	000	2690	.429752	000
197	018	1	.394627	017	1	.406710	017	1	.418467	017	1	.429914	016
377	036	2	.394802	035	2	.406881	034	2	.418633	033	2	.430075	032
557	054	3	.394977	053	3	.407051	051	3	.418798	050	3	.430236	048
737	072	4	.395152	070	4	.407221	068	4	.418964	066	4	.430398	065
917	090	5	.395326	087	5	.407391	085	5	.419129	083	5	.430559	081
1097	108	6	.395501	104	6	.407561	102	6	.419295	099	6	.430720	097
1277	126	7	.395676	122	7	.407731	119	7	.419460	116	7	.430881	113
1456	144	8	.395850	139	8	.407900	136	8	.419625	132	8	.431042	129
1636	162	9	.396025	157	9	.408070	153	9	.419791	149	9	.431203	145
1815	000	2490	.396199	000	2560	.408240	000	2630	.419956	000	2700	.431364	000
1995	018	1	.396374	017	1	.408410	017	1	.420121	016	1	.431525	016
2174	036	2	.396548	035	2	.408579	034	2	.420286	033	2	.431685	032
2353	054	3	.396722	053	3	.408749	051	3	.420451	049	3	.431846	048
2533	072	4	.396896	070	4	.408918	068	4	.420616	066	4	.432007	064
2712	090	5	.397070	087	5	.409087	085	5	.420781	083	5	.432167	080
2891	108	6	.397245	104	6	.409257	102	6	.420945	099	6	.432328	096
3070	126	7	.397418	122	7	.409426	119	7	.421110	115	7	.432488	112
3249	144	8	.397592	139	8	.409595	136	8	.421275	132	8	.432649	128
3428	162	9	.397766	157	9	.409764	153	9	.421439	148	9	.432809	144
3606	000	2500	.397940	000	2570	.409933	000	2640	.421604	000	2710	.432969	000
3785	018	1	.398114	017	1	.410102	017	1	.421768	016	1	.433129	016
3964	036	2	.398287	035	2	.410271	034	2	.421933	033	2	.433290	032
4143	054	3	.398461	053	3	.410440	050	3	.422097	049	3	.433450	048
4322	072	4	.398634	069	4	.410608	067	4	.422261	066	4	.433610	064
4501	090	5	.398808	087	5	.410777	084	5	.422426	082	5	.433770	080
4680	108	6	.398981	104	6	.410946	101	6	.422590	099	6	.433930	096
4859	126	7	.399154	121	7	.411114	118	7	.422754	115	7	.434090	112
5038	144	8	.399327	138	8	.411283	135	8	.422918	132	8	.434249	128
5217	162	9	.399501	156	9	.411451	152	9	.423082	148	9	.434409	144
5396	000	2510	.399674	000	2580	.411620	000	2650	.423246	000	2720	.434569	000
5575	018	1	.399847	017	1	.411788	017	1	.423410	016	1	.434728	016
5754	036	2	.400020	035	2	.411956	034	2	.423573	033	2	.434888	032
5933	054	3	.400192	053	3	.412124	050	3	.423737	049	3	.435048	048
6112	072	4	.400365	069	4	.412292	067	4	.423901	065	4	.435207	064
6291	090	5	.400538	087	5	.412460	084	5	.424064	081	5	.435366	080
6470	108	6	.400711	104	6	.412628	101	6	.424228	098	6	.435526	096
6649	126	7	.400883	121	7	.412796	118	7	.424392	114	7	.435685	112
6828	144	8	.401056	138	8	.412964	135	8	.424555	131	8	.435844	128
7007	162	9	.401228	156	9	.413132	152	9	.424718	147	9	.436003	144
7186	000	2520	.401400	000	2590	.413300	000	2660	.424882	000	2730	.436163	000
7365	018	1	.401573	017	1	.413467	017	1	.425045	016	1	.436322	016
7544	036	2	.401745	034	2	.413635	033	2	.425208	033	2	.436481	032
7723	054	3	.401917	052	3	.413802	050	3	.425371	049	3	.436640	047
7902	072	4	.402089	069	4	.413970	067	4	.425534	065	4	.436798	063
8081	090	5	.402261	086	5	.414137	084	5	.425697	081	5	.436957	079
8260	108	6	.402433	103	6	.414305	101	6	.425860	098	6	.437116	095
8439	126	7	.402605	120	7	.414472	117	7	.426023	114	7	.437275	111
8618	144	8	.402777	138	8	.414639	134	8	.426186	130	8	.437433	127
8797	162	9	.402949	155	9	.414806	151	9	.426349	147	9	.437592	143
8976	000	2530	.403120	000	2600	.414973	000	2670	.426511	000	2740	.437751	000
9155	018	1	.403292	017	1	.415140	017	1	.426674	016	1	.437909	016
9334	036	2	.403464	034	2	.415307	033	2	.426836	033	2	.438067	032
9513	054	3	.403635	052	3	.415474	050	3	.426999	049	3	.438226	047
9692	072	4	.403807	069	4	.415641	067	4	.427161	065	4	.438384	063
9871	090	5	.403978	086	5	.415808	084	5	.427324	081	5	.438542	079
10050	108	6	.404149	103	6	.415974	101	6	.427486	098	6	.438700	095
10229	126	7	.404320	120	7	.416141	117	7	.427648	114	7	.438859	111
10408	144	8	.404492	137	8	.416308	134	8	.427811	130	8	.439017	127
10587	162	9	.404663	154	9	.416474	150	9	.427973	147	9	.439175	143

(u.)			Log. .439333 to .491222			No. 2750 to 3099.								
No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
2750	.439333	000	2820	.450249	000	2890	.460898	000	2960	.471292	000	3030	.481292	000
1	.439491	016	1	.450403	015	1	.461048	015	1	.471438	015	1	.481438	015
2	.439648	032	2	.450557	031	2	.461198	030	2	.471585	029	2	.481585	029
3	.439806	047	3	.450711	046	3	.461348	045	3	.471732	044	3	.481732	044
4	.439964	063	4	.450865	062	4	.461498	060	4	.471878	059	4	.481878	059
5	.440122	079	5	.451018	077	5	.461649	075	5	.472025	073	5	.482025	073
6	.440279	095	6	.451172	092	6	.461799	090	6	.472171	088	6	.482171	088
7	.440437	111	7	.451326	108	7	.461948	105	7	.472317	102	7	.482317	102
8	.440594	126	8	.451479	123	8	.462098	120	8	.472464	117	8	.482464	117
9	.440752	142	9	.451633	139	9	.462248	135	9	.472610	132	9	.482610	132
2760	.440909	000	2830	.451786	000	2900	.462398	000	2970	.472756	000	3040	.482756	000
1	.441066	016	1	.451940	015	1	.462548	015	1	.472903	015	1	.482903	015
2	.441224	031	2	.452093	031	2	.462697	030	2	.473049	029	2	.483049	029
3	.441381	047	3	.452247	046	3	.462847	045	3	.473195	044	3	.483195	044
4	.441538	063	4	.452400	061	4	.462997	060	4	.473341	059	4	.483341	059
5	.441695	078	5	.452553	077	5	.463146	075	5	.473487	073	5	.483487	073
6	.441852	094	6	.452706	092	6	.463296	090	6	.473633	088	6	.483633	088
7	.442009	110	7	.452859	107	7	.463445	105	7	.473779	102	7	.483779	102
8	.442166	126	8	.453012	123	8	.463594	120	8	.473925	117	8	.483925	117
9	.442323	141	9	.453165	138	9	.463744	135	9	.474070	132	9	.484070	132
2770	.442480	000	2840	.453318	000	2910	.463893	000	2980	.474216	000	3050	.484216	000
1	.442636	016	1	.453471	015	1	.464042	015	1	.474362	015	1	.484362	015
2	.442793	031	2	.453624	031	2	.464191	030	2	.474508	029	2	.484508	029
3	.442950	047	3	.453777	046	3	.464340	045	3	.474653	044	3	.484653	044
4	.443106	063	4	.453930	061	4	.464489	060	4	.474799	058	4	.484799	058
5	.443263	078	5	.454082	077	5	.464639	075	5	.474944	073	5	.484944	073
6	.443419	094	6	.454235	092	6	.464787	090	6	.475090	088	6	.485090	088
7	.443576	110	7	.454387	107	7	.464936	105	7	.475235	102	7	.485235	102
8	.443732	126	8	.454540	123	8	.465085	120	8	.475381	117	8	.485381	117
9	.443888	141	9	.454692	138	9	.465234	135	9	.475526	131	9	.485526	131
2780	.444045	000	2850	.454845	000	2920	.465383	000	2990	.475671	000	3060	.485671	000
1	.444201	016	1	.454997	015	1	.465532	015	1	.475816	015	1	.485816	015
2	.444357	031	2	.455149	030	2	.465680	030	2	.475962	029	2	.485962	029
3	.444513	047	3	.455302	046	3	.465829	044	3	.476107	043	3	.486107	043
4	.444669	062	4	.455454	061	4	.465977	059	4	.476252	058	4	.486252	058
5	.444825	078	5	.455606	076	5	.466126	074	5	.476397	072	5	.486397	072
6	.444981	094	6	.455758	091	6	.466274	089	6	.476542	087	6	.486542	087
7	.445137	109	7	.455910	106	7	.466423	104	7	.476687	101	7	.486687	101
8	.445293	125	8	.456062	122	8	.466571	118	8	.476832	116	8	.486832	116
9	.445448	140	9	.456214	137	9	.466719	133	9	.476976	130	9	.486976	130
2790	.445604	000	2860	.456366	000	2930	.466868	000	3000	.477121	000	3070	.487121	000
1	.445760	016	1	.456518	015	1	.467016	015	1	.477266	014	1	.487266	014
2	.445915	031	2	.456670	030	2	.467164	030	2	.477411	029	2	.487411	029
3	.446071	047	3	.456821	046	3	.467312	044	3	.477555	043	3	.487555	043
4	.446226	062	4	.456973	061	4	.467460	059	4	.477700	058	4	.487700	058
5	.446382	078	5	.457125	076	5	.467608	074	5	.477844	072	5	.487844	072
6	.446537	094	6	.457276	091	6	.467756	089	6	.477989	087	6	.487989	087
7	.446692	109	7	.457428	106	7	.467904	104	7	.478133	101	7	.488133	101
8	.446848	125	8	.457579	122	8	.468052	118	8	.478278	116	8	.488278	116
9	.447003	140	9	.457730	137	9	.468200	133	9	.478422	130	9	.488422	130
2800	.447158	000	2870	.457882	000	2940	.468347	000	3010	.478566	000	3080	.488566	000
1	.447313	015	1	.458033	015	1	.468495	015	1	.478711	014	1	.488711	014
2	.447468	031	2	.458184	030	2	.468643	030	2	.478855	029	2	.488855	029
3	.447623	046	3	.458336	045	3	.468790	044	3	.478999	043	3	.488999	043
4	.447778	062	4	.458487	061	4	.468938	059	4	.479143	058	4	.489143	058
5	.447933	077	5	.458638	076	5	.469085	074	5	.479287	072	5	.489287	072
6	.448088	093	6	.458789	091	6	.469233	089	6	.479431	086	6	.489431	086
7	.448242	108	7	.458940	106	7	.469380	104	7	.479575	101	7	.489575	101
8	.448397	124	8	.459091	121	8	.469527	118	8	.479719	115	8	.489719	115
9	.448552	139	9	.459242	136	9	.469675	133	9	.479863	130	9	.489863	130
2810	.448706	000	2880	.459392	000	2950	.469822	000	3020	.480007	000	3090	.489993	000
1	.448861	015	1	.459543	015	1	.469969	015	1	.480151	014	1	.490149	014
2	.449015	031	2	.459694	030	2	.470116	029	2	.480294	029	2	.490292	029
3	.449170	046	3	.459845	045	3	.470263	044	3	.480438	043	3	.490436	043
4	.449324	062	4	.459995	061	4	.470410	059	4	.480582	058	4	.490580	058
5	.449478	077	5	.460146	076	5	.470557	074	5	.480725	072	5	.490723	072
6	.449633	092	6	.460296	091	6	.470704	088	6	.480869	086	6	.490867	086
7	.449787	108	7	.460447	106	7	.470851	103	7	.481012	101	7	.490991	101
8	.449941	123	8	.460597	121	8	.470998	118	8	.481156	115	8	.491154	115
9	.450095	139	9	.460747	136	9	.471145	132	9	.481299	130	9	.491297	130

Log. .491362 to .537693

No. 3100 to 3149.

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Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
000	3170	.501059	000	3240	.510545	000	3310	.519828	000	3380	.528917	000
014	1	.501196	014	1	.510679	013	1	.519959	013	1	.529045	013
028	2	.501333	027	2	.510813	027	2	.520090	026	2	.529174	026
042	3	.501470	041	3	.510947	040	3	.520221	039	3	.529302	038
056	4	.501607	055	4	.511081	054	4	.520352	052	4	.529430	051
070	5	.501744	068	5	.511215	067	5	.520483	066	5	.529559	064
084	6	.501880	082	6	.511348	080	6	.520614	079	6	.529687	077
098	7	.502017	096	7	.511482	094	7	.520745	092	7	.529815	090
112	8	.502154	110	8	.511616	107	8	.520876	105	8	.529943	103
126	9	.502290	123	9	.511750	121	9	.521007	118	9	.530072	116
000	3180	.502427	000	3250	.511883	000	3320	.521138	000	3390	.530200	000
014	1	.502564	014	1	.512017	013	1	.521269	013	1	.530328	013
028	2	.502700	027	2	.512150	027	2	.521400	026	2	.530456	026
042	3	.502837	041	3	.512284	040	3	.521530	039	3	.530584	038
056	4	.502973	054	4	.512417	053	4	.521661	052	4	.530712	051
070	5	.503109	068	5	.512551	067	5	.521792	065	5	.530840	064
084	6	.503246	082	6	.512684	080	6	.521922	078	6	.530968	077
098	7	.503382	095	7	.512818	093	7	.522053	097	7	.531095	090
112	8	.503518	109	8	.512951	107	8	.522183	104	8	.531223	102
126	9	.503654	123	9	.513084	120	9	.522314	117	9	.531351	115
000	3190	.503791	000	3260	.513218	000	3330	.522444	000	3400	.531479	000
014	1	.503927	014	1	.513351	013	1	.522575	013	1	.531607	013
028	2	.504063	027	2	.513484	027	2	.522705	026	2	.531734	025
041	3	.504199	041	3	.513617	040	3	.522835	039	3	.531862	038
056	4	.504335	054	4	.513750	053	4	.522966	052	4	.531990	051
069	5	.504471	068	5	.513883	066	5	.523096	065	5	.532117	063
083	6	.504607	082	6	.514016	080	6	.523226	078	6	.532245	076
097	7	.504743	095	7	.514149	093	7	.523356	097	7	.532372	089
111	8	.504878	109	8	.514282	106	8	.523486	104	8	.532500	102
125	9	.505014	122	9	.514415	120	9	.523616	117	9	.532627	114
000	3200	.505150	000	3270	.514548	000	3340	.523746	000	3410	.532754	000
014	1	.505286	014	1	.514680	013	1	.523876	013	1	.532882	013
028	2	.505421	027	2	.514813	027	2	.524006	026	2	.533009	025
041	3	.505557	041	3	.514946	040	3	.524136	039	3	.533136	038
056	4	.505692	054	4	.515079	053	4	.524266	052	4	.533263	051
069	5	.505828	068	5	.515211	066	5	.524396	065	5	.533391	063
083	6	.505963	082	6	.515344	080	6	.524526	078	6	.533518	076
097	7	.506099	095	7	.515476	093	7	.524656	091	7	.533645	089
111	8	.506234	109	8	.515609	106	8	.524785	104	8	.533772	102
125	9	.506370	122	9	.515741	120	9	.524915	117	9	.533899	114
000	3210	.506505	000	3280	.515874	000	3350	.525045	000	3420	.534026	000
014	1	.506640	013	1	.516006	013	1	.525174	013	1	.534153	013
028	2	.506775	027	2	.516139	026	2	.525304	026	2	.534280	025
041	3	.506911	040	3	.516271	040	3	.525434	039	3	.534407	038
055	4	.507046	054	4	.516403	053	4	.525563	052	4	.534534	051
069	5	.507181	067	5	.516535	066	5	.525692	065	5	.534661	063
083	6	.507316	081	6	.516668	079	6	.525822	078	6	.534787	076
097	7	.507451	094	7	.516800	092	7	.525951	091	7	.534914	089
110	8	.507586	108	8	.516932	106	8	.526081	104	8	.535041	102
124	9	.507721	121	9	.517064	119	9	.526216	117	9	.535167	114
000	3220	.507856	000	3290	.517196	000	3360	.526339	000	3430	.535294	000
014	1	.507991	013	1	.517328	013	1	.526468	013	1	.535421	013
028	2	.508125	027	2	.517460	026	2	.526598	026	2	.535547	025
041	3	.508260	040	3	.517592	040	3	.526727	039	3	.535674	038
055	4	.508395	054	4	.517724	053	4	.526856	052	4	.535800	050
069	5	.508530	067	5	.517855	066	5	.526985	065	5	.535927	063
083	6	.508664	081	6	.517987	079	6	.527114	078	6	.536053	076
097	7	.508799	094	7	.518119	092	7	.527243	091	7	.536179	088
110	8	.508933	108	8	.518251	106	8	.527372	104	8	.536306	101
124	9	.509068	121	9	.518382	119	9	.527501	117	9	.536432	114
000	3230	.509202	000	3300	.518514	000	3370	.527630	000	3440	.536558	000
014	1	.509337	013	1	.518645	013	1	.527759	013	1	.536685	013
027	2	.509471	027	2	.518777	026	2	.527888	026	2	.536811	025
041	3	.509606	040	3	.518909	039	3	.528016	038	3	.536937	038
055	4	.509740	054	4	.519040	052	4	.528145	051	4	.537063	050
068	5	.509874	067	5	.519171	066	5	.528274	064	5	.537189	063
082	6	.510008	081	6	.519303	079	6	.528402	077	6	.537315	076
096	7	.510143	094	7	.519434	092	7	.528531	090	7	.537441	088
110	8	.510277	108	8	.519565	105	8	.528660	103	8	.537567	101
123	9	.510411	121	9	.519697	118	9	.528788	116	9	.537693	114

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Log. .537819 to .579669

No. 3450 to 3799.

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
3450	.537819	000	3520	.546543	000	3590	.555094	000	3660	.563481	000	3730	.571	
1	.537945	013	1	.546666	012	1	.555215	012	1	.563600	012	1	.571	
2	.538071	025	2	.546789	025	2	.555336	024	2	.563718	024	2	.571	
3	.538197	038	3	.546913	037	3	.555457	036	3	.563837	036	3	.572	
4	.538322	050	4	.547036	049	4	.555578	048	4	.563955	048	4	.572	
5	.538448	063	5	.547159	062	5	.555699	060	5	.564074	060	5	.572	
6	.538574	076	6	.547282	074	6	.555820	072	6	.564192	071	6	.572	
7	.538699	088	7	.547405	086	7	.555940	084	7	.564311	083	7	.572	
8	.538825	101	8	.547529	099	8	.556061	096	8	.564429	095	8	.572	
9	.538951	114	9	.547652	111	9	.556182	108	9	.564548	107	9	.572	
3460	.539076	000	3530	.547775	000	3600	.556302	000	3670	.564666	000	3740	.572	
1	.539202	013	1	.547898	012	1	.556423	012	1	.564784	012	1	.572	
2	.539327	025	2	.548021	025	2	.556544	024	2	.564903	024	2	.573	
3	.539452	038	3	.548144	037	3	.556664	036	3	.565021	036	3	.573	
4	.539578	050	4	.548266	049	4	.556785	048	4	.565139	047	4	.573	
5	.539703	063	5	.548389	061	5	.556905	060	5	.565257	059	5	.573	
6	.539829	075	6	.548512	074	6	.557026	072	6	.565375	071	6	.573	
7	.539954	088	7	.548635	086	7	.557146	084	7	.565494	083	7	.573	
8	.540079	100	8	.548758	098	8	.557266	096	8	.565612	095	8	.573	
9	.540204	113	9	.548881	111	9	.557387	108	9	.565730	107	9	.573	
3470	.540329	000	3540	.549003	000	3610	.557507	000	3680	.565848	000	3750	.574	
1	.540455	012	1	.549126	012	1	.557627	012	1	.565966	012	1	.574	
2	.540580	025	2	.549249	025	2	.557748	024	2	.566084	024	2	.574	
3	.540705	037	3	.549371	037	3	.557868	036	3	.566202	035	3	.574	
4	.540830	050	4	.549494	049	4	.557988	048	4	.566320	047	4	.574	
5	.540955	062	5	.549616	061	5	.558108	060	5	.566437	059	5	.574	
6	.541080	075	6	.549739	074	6	.558228	072	6	.566555	071	6	.574	
7	.541205	087	7	.549861	086	7	.558348	084	7	.566673	083	7	.574	
8	.541330	100	8	.549984	098	8	.558469	096	8	.566791	094	8	.574	
9	.541454	112	9	.550106	111	9	.558589	108	9	.566909	106	9	.574	
3480	.541579	000	3550	.550228	000	3620	.558709	000	3690	.567026	000	3760	.575	
1	.541704	012	1	.550351	012	1	.558828	012	1	.567144	012	1	.575	
2	.541829	025	2	.550473	024	2	.558948	024	2	.567262	024	2	.575	
3	.541953	037	3	.550595	037	3	.559068	036	3	.567379	035	3	.575	
4	.542078	050	4	.550717	049	4	.559188	048	4	.567497	047	4	.575	
5	.542203	062	5	.550840	061	5	.559308	060	5	.567614	059	5	.575	
6	.542327	075	6	.550962	073	6	.559428	072	6	.567732	071	6	.575	
7	.542452	087	7	.551084	086	7	.559548	084	7	.567849	083	7	.575	
8	.542576	100	8	.551206	098	8	.559667	096	8	.567967	094	8	.575	
9	.542701	112	9	.551328	110	9	.559787	108	9	.568084	106	9	.575	
3490	.542825	000	3560	.551450	000	3630	.559907	000	3700	.568202	000	3770	.576	
1	.542950	012	1	.551572	012	1	.560026	012	1	.568319	012	1	.576	
2	.543074	025	2	.551694	024	2	.560146	024	2	.568436	023	2	.576	
3	.543199	037	3	.551816	037	3	.560265	036	3	.568554	035	3	.576	
4	.543323	050	4	.551938	049	4	.560385	048	4	.568671	047	4	.576	
5	.543447	062	5	.552059	061	5	.560504	060	5	.568788	058	5	.576	
6	.543571	075	6	.552181	073	6	.560624	072	6	.568905	070	6	.576	
7	.543696	087	7	.552303	086	7	.560743	084	7	.569023	082	7	.576	
8	.543820	100	8	.552425	098	8	.560863	096	8	.569140	094	8	.576	
9	.543944	112	9	.552546	110	9	.560982	108	9	.569257	106	9	.576	
3500	.544068	000	3570	.552668	000	3640	.561101	000	3710	.569374	000	3780	.577	
1	.544192	012	1	.552790	012	1	.561221	012	1	.569491	012	1	.577	
2	.544316	025	2	.552911	024	2	.561340	024	2	.569608	023	2	.577	
3	.544440	037	3	.553033	036	3	.561459	036	3	.569725	035	3	.577	
4	.544564	050	4	.553154	049	4	.561578	048	4	.569842	047	4	.577	
5	.544688	062	5	.553276	061	5	.561697	060	5	.569959	058	5	.577	
6	.544812	074	6	.553397	073	6	.561817	072	6	.570076	070	6	.577	
7	.544936	087	7	.553519	085	7	.561936	084	7	.570193	082	7	.577	
8	.545060	099	8	.553640	097	8	.562055	096	8	.570309	094	8	.577	
9	.545183	112	9	.553762	109	9	.562174	108	9	.570426	106	9	.577	
3510	.545307	000	3580	.553883	000	3650	.562293	000	3720	.570543	000	3790	.578	
1	.545431	012	1	.554004	012	1	.562412	012	1	.570660	012	1	.578	
2	.545554	025	2	.554126	024	2	.562531	024	2	.570776	023	2	.578	
3	.545678	037	3	.554247	036	3	.562650	036	3	.570893	035	3	.578	
4	.545802	049	4	.554368	049	4	.562768	048	4	.571010	047	4	.578	
5	.545925	062	5	.554489	061	5	.562887	060	5	.571126	058	5	.578	
6	.546049	074	6	.554610	073	6	.563006	071	6	.571243	070	6	.578	
7	.546172	086	7	.554731	085	7	.563125	083	7	.571359	081	7	.578	
8	.546296	099	8	.554852	097	8	.563244	095	8	.571476	093	8	.578	
9	.546419	111	9	.554973	109	9	.563362	107	9	.571592	105	9	.578	

Log. .579784 to .617943

No. 3800 to 4149

(u.)

Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
1	000	.587711	000	3840	.595496	000	4010	.603144	000	4080	.610600	000
3	011	1 .587823	011	1 .595606	011	1 .603253	011	1 .610767	011	1 .610767	011	011
2	023	2 .587935	022	2 .595717	022	2 .603361	022	2 .610873	021	2 .610873	021	021
3	034	3 .588047	034	3 .595827	033	3 .603469	033	3 .610979	032	3 .610979	032	032
3	046	4 .588160	045	4 .595937	044	4 .603577	043	4 .611086	042	4 .611086	042	042
3	057	5 .588272	056	5 .596047	055	5 .603685	054	5 .611192	053	5 .611192	053	053
3	068	6 .588384	067	6 .596157	066	6 .603794	065	6 .611298	064	6 .611298	064	064
3	080	7 .588496	078	7 .596267	077	7 .603902	076	7 .611405	074	7 .611405	074	074
7	091	8 .588608	090	8 .596377	088	8 .604010	087	8 .611511	085	8 .611511	085	085
1	103	9 .588720	101	9 .596487	099	9 .604118	098	9 .611617	095	9 .611617	095	095
5	000	.588832	000	3950	.596597	000	4020	.604226	000	4090	.611723	000
3	011	1 .588944	011	1 .596707	011	1 .604334	011	1 .611829	011	1 .611829	011	011
3	023	2 .589055	022	2 .596817	022	2 .604442	022	2 .611936	021	2 .611936	021	021
7	034	3 .589167	033	3 .596927	033	3 .604550	032	3 .612042	032	3 .612042	032	032
1	046	4 .589279	044	4 .597037	044	4 .604658	043	4 .612148	042	4 .612148	042	042
1	057	5 .589391	056	5 .597146	055	5 .604766	054	5 .612254	053	5 .612254	053	053
3	068	6 .589503	067	6 .597256	066	6 .604874	065	6 .612360	064	6 .612360	064	064
2	080	7 .589614	078	7 .597366	077	7 .604982	076	7 .612466	074	7 .612466	074	074
3	091	8 .589726	089	8 .597476	088	8 .605089	086	8 .612572	085	8 .612572	085	085
3	103	9 .589838	100	9 .597585	099	9 .605197	097	9 .612678	095	9 .612678	095	095
3	000	.589950	000	3960	.597695	000	4030	.605305	000	4100	.612784	000
7	011	1 .590061	011	1 .597805	011	1 .605413	011	1 .612890	011	1 .612890	011	011
1	023	2 .590173	022	2 .597914	022	2 .605520	022	2 .612996	021	2 .612996	021	021
1	034	3 .590284	033	3 .598024	033	3 .605628	032	3 .613101	032	3 .613101	032	032
3	045	4 .590396	044	4 .598134	044	4 .605736	043	4 .613207	042	4 .613207	042	042
1	056	5 .590507	056	5 .598243	055	5 .605843	054	5 .613313	053	5 .613313	053	053
3	068	6 .590619	067	6 .598353	066	6 .605951	065	6 .613419	064	6 .613419	064	064
3	079	7 .590730	078	7 .598462	077	7 .606059	076	7 .613525	074	7 .613525	074	074
3	090	8 .590842	089	8 .598572	088	8 .606166	086	8 .613630	085	8 .613630	085	085
3	102	9 .590953	100	9 .598681	099	9 .606274	097	9 .613736	095	9 .613736	095	095
3	000	.591065	000	3970	.598790	000	4040	.606381	000	4110	.613842	000
3	011	1 .591176	011	1 .598900	011	1 .606489	011	1 .613947	011	1 .613947	011	011
3	023	2 .591287	022	2 .599009	022	2 .606596	021	2 .614053	021	2 .614053	021	021
3	034	3 .591399	033	3 .599119	033	3 .606704	033	3 .614159	032	3 .614159	032	032
3	045	4 .591510	044	4 .599228	044	4 .606811	043	4 .614264	042	4 .614264	042	042
3	056	5 .591621	056	5 .599337	055	5 .606918	054	5 .614370	053	5 .614370	053	053
3	068	6 .591732	067	6 .599446	066	6 .607026	064	6 .614475	063	6 .614475	063	063
3	079	7 .591843	078	7 .599556	077	7 .607133	075	7 .614581	074	7 .614581	074	074
3	090	8 .591955	089	8 .599665	088	8 .607240	086	8 .614686	084	8 .614686	084	084
3	102	9 .592066	100	9 .599774	099	9 .607348	096	9 .614792	095	9 .614792	095	095
1	000	.592177	000	3980	.599883	000	4050	.607455	000	4120	.614897	000
1	011	1 .592288	011	1 .599992	011	1 .607562	011	1 .615003	011	1 .615003	011	011
7	023	2 .592399	022	2 .600101	022	2 .607669	021	2 .615108	021	2 .615108	021	021
3	034	3 .592510	033	3 .600210	033	3 .607777	032	3 .615213	031	3 .615213	031	031
3	045	4 .592621	044	4 .600319	044	4 .607884	043	4 .615319	042	4 .615319	042	042
3	056	5 .592732	055	5 .600428	054	5 .607991	054	5 .615424	052	5 .615424	052	052
3	068	6 .592843	067	6 .600537	065	6 .608098	064	6 .615529	063	6 .615529	063	063
3	079	7 .592954	078	7 .600646	076	7 .608205	075	7 .615634	073	7 .615634	073	073
3	090	8 .593064	089	8 .600755	087	8 .608312	086	8 .615740	084	8 .615740	084	084
3	102	9 .593175	100	9 .600864	098	9 .608419	096	9 .615845	095	9 .615845	095	095
1	000	.593286	000	3990	.600973	000	4060	.608526	000	4130	.615950	000
3	011	1 .593397	011	1 .601082	011	1 .608633	011	1 .616055	011	1 .616055	011	011
3	022	2 .593508	022	2 .601190	022	2 .608740	021	2 .616160	021	2 .616160	021	021
3	034	3 .593618	033	3 .601299	033	3 .608847	032	3 .616265	031	3 .616265	031	031
3	045	4 .593729	044	4 .601408	044	4 .608954	043	4 .616370	042	4 .616370	042	042
1	056	5 .593840	055	5 .601517	054	5 .609060	053	5 .616475	052	5 .616475	052	052
3	067	6 .593950	066	6 .601625	065	6 .609167	064	6 .616580	063	6 .616580	063	063
3	078	7 .594061	077	7 .601734	076	7 .609274	075	7 .616685	073	7 .616685	073	073
3	090	8 .594171	088	8 .601843	087	8 .609381	086	8 .616790	084	8 .616790	084	084
3	101	9 .594282	099	9 .601951	098	9 .609488	096	9 .616895	095	9 .616895	095	095
7	000	.594393	000	4000	.602060	000	4070	.609594	000	4140	.617000	000
3	011	1 .594503	011	1 .602169	011	1 .609701	011	1 .617105	010	1 .617105	010	010
3	022	2 .594613	022	2 .602277	022	2 .609808	021	2 .617210	021	2 .617210	021	021
3	034	3 .594724	033	3 .602386	033	3 .609914	032	3 .617315	031	3 .617315	031	031
3	045	4 .594834	044	4 .602494	043	4 .610021	043	4 .617420	042	4 .617420	042	042
3	056	5 .594945	055	5 .602602	054	5 .610128	053	5 .617524	052	5 .617524	052	052
3	067	6 .595055	066	6 .602711	065	6 .610234	064	6 .617629	063	6 .617629	063	063
3	078	7 .595165	077	7 .602819	076	7 .610341	075	7 .617734	073	7 .617734	073	073
3	090	8 .595276	088	8 .602928	087	8 .610447	086	8 .617839	084	8 .617839	084	084
3	101	9 .595386	099	9 .603036	098	9 .610554	096	9 .617943	094	9 .617943	094	094

(u.)			Log. .618048 to .653116			No. 4150 to 4499.		
No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
4160 .618048	000		4220 .625312	000		4290 .632457	000	
1 .618153	010		1 .625415	010		1 .632558	010	
2 .618257	021		2 .625518	021		2 .632660	020	
3 .618362	031		3 .625621	031		3 .632761	030	
4 .618466	042		4 .625724	041		4 .632862	041	
5 .618571	052		5 .625827	051		5 .632963	051	
6 .618675	062		6 .625929	062		6 .633064	061	
7 .618780	073		7 .626032	072		7 .633165	071	
8 .618884	083		8 .626135	082		8 .633266	081	
9 .618989	094		9 .626238	093		9 .633367	091	
4160 .619093	000		4230 .626340	000		4300 .633468	000	
1 .619198	010		1 .626443	010		1 .633569	010	
2 .619302	021		2 .626546	021		2 .633670	020	
3 .619406	031		3 .626648	031		3 .633771	030	
4 .619511	042		4 .626751	041		4 .633872	040	
5 .619615	052		5 .626853	051		5 .633973	050	
6 .619719	062		6 .626956	062		6 .634074	061	
7 .619823	073		7 .627058	072		7 .634175	071	
8 .619928	083		8 .627161	082		8 .634276	081	
9 .620032	094		9 .627263	093		9 .634376	091	
4170 .620136	000		4240 .627366	000		4310 .634477	000	
1 .620240	010		1 .627468	010		1 .634578	010	
2 .620344	021		2 .627571	020		2 .634679	020	
3 .620448	031		3 .627673	031		3 .634779	030	
4 .620552	042		4 .627775	041		4 .634880	040	
5 .620656	052		5 .627878	051		5 .634981	050	
6 .620760	062		6 .627980	061		6 .635081	061	
7 .620864	073		7 .628082	072		7 .635182	071	
8 .620968	083		8 .628184	082		8 .635283	081	
9 .621072	094		9 .628287	092		9 .635383	091	
4180 .621176	000		4250 .628389	000		4320 .635484	000	
1 .621280	010		1 .628491	010		1 .635584	010	
2 .621384	021		2 .628593	020		2 .635685	020	
3 .621488	031		3 .628695	031		3 .635785	030	
4 .621592	042		4 .628797	041		4 .635886	040	
5 .621695	052		5 .628900	051		5 .635986	050	
6 .621799	062		6 .629002	061		6 .636086	060	
7 .621903	073		7 .629104	072		7 .636187	070	
8 .622007	083		8 .629206	082		8 .636287	080	
9 .622110	094		9 .629308	092		9 .636388	090	
4190 .622214	000		4260 .629410	000		4330 .636488	000	
1 .622318	010		1 .629511	010		1 .636588	010	
2 .622421	021		2 .629613	020		2 .636688	020	
3 .622525	031		3 .629715	030		3 .636789	030	
4 .622628	041		4 .629817	041		4 .636889	040	
5 .622732	052		5 .629919	051		5 .636989	050	
6 .622835	062		6 .630021	061		6 .637089	060	
7 .622939	072		7 .630123	071		7 .637189	070	
8 .623042	083		8 .630224	081		8 .637289	080	
9 .623146	093		9 .630326	091		9 .637390	090	
4200 .623249	000		4270 .630428	000		4340 .637490	000	
1 .623353	010		1 .630530	010		1 .637590	010	
2 .623456	021		2 .630631	020		2 .637690	020	
3 .623559	031		3 .630733	030		3 .637790	030	
4 .623663	041		4 .630834	041		4 .637890	040	
5 .623766	052		5 .630936	051		5 .637990	050	
6 .623869	062		6 .631038	061		6 .638090	060	
7 .623972	072		7 .631139	071		7 .638190	070	
8 .624076	083		8 .631241	081		8 .638289	080	
9 .624179	093		9 .631342	091		9 .638389	090	
4210 .624282	000		4280 .631444	000		4350 .638489	000	
1 .624385	010		1 .631545	010		1 .638589	010	
2 .624488	021		2 .631647	020		2 .638689	020	
3 .624591	031		3 .631748	030		3 .638789	030	
4 .624694	041		4 .631849	041		4 .638888	040	
5 .624798	051		5 .631951	051		5 .638988	050	
6 .624901	062		6 .632052	061		6 .639088	060	
7 .625004	072		7 .632153	071		7 .639188	070	
8 .625107	082		8 .632255	081		8 .639287	080	
9 .625209	093		9 .632356	091		9 .639387	090	
4220 .632457	000		4360 .639486	000		4430 .640481	000	
1 .632558	010		1 .639586	010		1 .640581	010	
2 .632660	020		2 .639686	020		2 .640680	020	
3 .632761	030		3 .639785	030		3 .640779	030	
4 .632862	041		4 .639885	040		4 .640879	040	
5 .632963	051		5 .639984	050		5 .640978	050	
6 .633064	061		6 .640084	060		6 .641077	060	
7 .633165	071		7 .640183	070		7 .641176	070	
8 .633266	081		8 .640283	080		8 .641276	080	
9 .633367	091		9 .640382	090		9 .641375	090	
4230 .626340	000		4370 .640481	000		4440 .64738		
1 .626443	010		1 .640581	010		1 .64748		
2 .626546	021		2 .640680	020		2 .64757		
3 .626648	031		3 .640779	030		3 .64767		
4 .626751	041		4 .640879	040		4 .64777		
5 .626853	051		5 .640978	050		5 .64787		
6 .626956	062		6 .641077	060		6 .64796		
7 .627058	072		7 .641176	070		7 .64806		
8 .627161	082		8 .641276	080		8 .64816		
9 .627263	093		9 .641375	090		9 .64826		
4240 .627366	000		4380 .641474	000		4450 .64836		
1 .627468	010		1 .641573	010		1 .64845		
2 .627571	020		2 .641672	020		2 .64855		
3 .627673	031		3 .641771	030		3 .64865		
4 .627775	041		4 .641870	040		4 .64875		
5 .627878	051		5 .641970	050		5 .64884		
6 .627980	061		6 .642069	059		6 .64894		
7 .628082	072		7 .642168	069		7 .64904		
8 .628184	082		8 .642267	079		8 .64914		
9 .628287	092		9 .642366	089		9 .64923		
4250 .628389	000		4390 .642464	000		4460 .64933		
1 .628491	010		1 .642563	010		1 .64943		
2 .628593	020		2 .642662	020		2 .64953		
3 .628695	031		3 .642761	030		3 .64962		
4 .628797	041		4 .642860	040		4 .64972		
5 .628900	051		5 .642959	049		5 .64982		
6 .629002	061		6 .643058	059		6 .64991		
7 .629104	072		7 .643156	069		7 .65001		
8 .629206	082		8 .643255	079		8 .65011		
9 .629308	092		9 .643354	089		9 .65021		
4260 .629410	000		4400 .643453	000		4470 .65030		
1 .629511	010		1 .643551	010		1 .65040		
2 .629613	020		2 .643650	020		2 .65050		
3 .629715	030		3 .643749	030		3 .65059		
4 .629817	041		4 .643847	039		4 .65069		
5 .629919	051		5 .643946	049		5 .65079		
6 .630021	061		6 .644044	059		6 .65089		
7 .630123	071		7 .644143	069		7 .65098		
8 .630224	081		8 .644242	079		8 .65108		
9 .630326	091		9 .644340	089		9 .65118		
4270 .630428	000		4410 .644439	000		4480 .65127		
1 .630530	010		1 .644537	010		1 .65137		
2 .630631	020		2 .644635	020		2 .65147		
3 .630733	030		3 .644734	030		3 .65156		
4 .630834	041		4 .644832	039		4 .65166		
5 .630936	051		5 .644931	049		5 .65176		
6 .631038	061		6 .645029	059		6 .65185		
7 .631139	071		7 .645127	069		7 .65195		
8 .631241	081		8 .645226	079		8 .65205		
9 .631342	091		9 .645324	089		9 .65215		
4280 .631444	000		4420 .645422	000		4490 .65224		
1 .631545	010		1 .645520	010		1 .65234		
2 .631647	020		2 .645619	020		2 .65244		
3 .631748	030		3 .645717	030		3 .65253		
4 .631849	041		4 .645815	039		4 .65263		
5 .631951	051		5 .645913	049		5 .65273		
6 .632052	061		6 .646011	059		6 .65282		
7 .632153	071		7 .646109	069		7 .65292		
8 .632255	081		8 .646208	079		8 .65301		
9 .632356	091		9 .646306	089		9 .65311		

Log. .653213 to .685652

No. 4500 to 4849.

(u.)

Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
.3213	000	4570	.659916	000	4640	.666518	000	4710	.673021	000	4780	.679428	000
.3309	010	1	.660011	010	1	.666612	009	1	.673113	009	1	.679519	009
.3405	019	2	.660106	019	2	.666705	019	2	.673205	018	2	.679610	018
.3502	029	3	.660201	028	3	.666799	028	3	.673297	028	3	.679700	027
.3598	038	4	.660296	038	4	.666892	037	4	.673390	037	4	.679791	036
.3695	048	5	.660391	047	5	.666986	047	5	.673482	046	5	.679882	045
.3791	058	6	.660486	057	6	.667079	056	6	.673574	055	6	.679973	055
.3888	067	7	.660581	067	7	.667173	065	7	.673666	064	7	.680063	064
.3984	077	8	.660676	076	8	.667266	074	8	.673758	074	8	.680154	073
.4080	087	9	.660771	086	9	.667359	084	9	.673850	083	9	.680245	082
.4176	000	4580	.660865	000	4650	.667453	000	4720	.673942	000	4790	.680335	000
.4273	010	1	.660960	009	1	.667546	009	1	.674034	009	1	.680426	009
.4369	019	2	.661055	019	2	.667640	019	2	.674126	018	2	.680517	018
.4465	029	3	.661150	028	3	.667733	028	3	.674218	028	3	.680607	027
.4562	038	4	.661245	038	4	.667826	037	4	.674310	037	4	.680698	036
.4658	048	5	.661339	047	5	.667920	047	5	.674402	046	5	.680789	045
.4754	058	6	.661434	057	6	.668013	056	6	.674494	055	6	.680879	055
.4850	067	7	.661529	066	7	.668106	065	7	.674586	064	7	.680970	064
.4946	077	8	.661623	076	8	.668199	074	8	.674677	074	8	.681060	073
.5042	086	9	.661718	085	9	.668293	084	9	.674769	083	9	.681151	082
.5138	000	4590	.661813	000	4660	.668386	000	4730	.674861	000	4800	.681241	000
.5234	010	1	.661907	009	1	.668479	009	1	.674953	009	1	.681332	009
.5331	019	2	.662002	019	2	.668572	019	2	.675045	018	2	.681422	018
.5427	029	3	.662096	028	3	.668665	028	3	.675136	028	3	.681513	027
.5523	038	4	.662191	038	4	.668758	037	4	.675228	037	4	.681603	036
.5619	048	5	.662285	047	5	.668852	047	5	.675320	046	5	.681693	045
.5714	058	6	.662380	057	6	.668945	056	6	.675412	055	6	.681784	054
.5810	067	7	.662474	066	7	.669038	065	7	.675503	064	7	.681874	063
.5906	077	8	.662569	076	8	.669131	074	8	.675595	074	8	.681964	072
.6002	086	9	.662663	085	9	.669224	084	9	.675687	083	9	.682055	081
.6098	000	4600	.662758	000	4670	.669317	000	4740	.675778	000	4810	.682145	000
.6194	010	1	.662852	009	1	.669410	009	1	.675870	009	1	.682235	009
.6290	019	2	.662947	019	2	.669503	019	2	.675961	018	2	.682326	018
.6386	029	3	.663041	028	3	.669596	028	3	.676053	027	3	.682416	027
.6481	038	4	.663135	038	4	.669689	037	4	.676145	036	4	.682506	036
.6577	048	5	.663230	047	5	.669782	047	5	.676236	046	5	.682596	045
.6673	058	6	.663324	057	6	.669875	056	6	.676328	055	6	.682686	054
.6769	067	7	.663418	066	7	.669967	065	7	.676419	064	7	.682777	063
.6864	077	8	.663512	076	8	.670060	074	8	.676511	073	8	.682867	072
.6960	086	9	.663607	085	9	.670153	084	9	.676602	082	9	.682957	081
.7056	000	4610	.663701	000	4680	.670246	000	4750	.676694	000	4820	.683047	000
.7151	010	1	.663795	009	1	.670339	009	1	.676785	009	1	.683137	009
.7247	019	2	.663889	019	2	.670431	018	2	.676876	018	2	.683227	018
.7343	028	3	.663983	028	3	.670524	028	3	.676968	027	3	.683317	027
.7438	038	4	.664078	038	4	.670617	037	4	.677059	036	4	.683407	036
.7534	047	5	.664172	047	5	.670710	046	5	.677150	046	5	.683497	045
.7629	057	6	.664266	056	6	.670802	055	6	.677242	055	6	.683587	054
.7725	067	7	.664360	066	7	.670895	064	7	.677333	064	7	.683677	063
.7820	076	8	.664454	075	8	.670988	074	8	.677424	073	8	.683767	072
.7916	086	9	.664548	085	9	.671080	083	9	.677516	082	9	.683857	081
.8011	000	4620	.664642	000	4690	.671173	000	4760	.677607	000	4830	.683947	000
.8107	010	1	.664736	009	1	.671265	009	1	.677698	009	1	.684037	009
.8202	019	2	.664830	019	2	.671358	018	2	.677789	018	2	.684127	018
.8298	028	3	.664924	028	3	.671451	028	3	.677881	027	3	.684217	027
.8393	038	4	.665018	038	4	.671543	037	4	.677972	036	4	.684307	036
.8488	047	5	.665112	047	5	.671636	046	5	.678063	045	5	.684396	045
.8584	057	6	.665206	056	6	.671728	055	6	.678154	055	6	.684486	054
.8679	067	7	.665299	066	7	.671821	064	7	.678245	064	7	.684576	063
.8774	076	8	.665393	075	8	.671913	074	8	.678336	073	8	.684666	072
.8870	086	9	.665487	085	9	.672005	083	9	.678427	082	9	.684756	081
.8965	000	4630	.665581	000	4700	.672098	000	4770	.678518	000	4840	.684845	000
.9060	010	1	.665675	009	1	.672190	009	1	.678609	009	1	.684935	009
.9155	019	2	.665769	019	2	.672283	018	2	.678700	018	2	.685025	018
.9250	028	3	.665862	028	3	.672375	028	3	.678791	027	3	.685114	027
.9346	038	4	.665956	038	4	.672467	037	4	.678882	036	4	.685204	036
.9441	047	5	.666050	047	5	.672560	046	5	.678973	045	5	.685294	045
.9536	057	6	.666143	056	6	.672652	055	6	.679064	055	6	.685383	054
.9631	067	7	.666237	066	7	.672744	064	7	.679155	064	7	.685473	063
.9726	076	8	.666331	075	8	.672836	074	8	.679246	073	8	.685563	072
.9821	086	9	.666424	085	9	.672929	083	9	.679337	082	9	.685652	081

Log. .685742 to .715920

No. 4850 to 5199.

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
4850	.685742	00	4920	.691965	00	4990	.698100	00	5060	.704150	00	5130	.710	
1	.685831	09	1	.692053	09	1	.698188	09	1	.704236	09	1	.710	
2	.685921	18	2	.692142	18	2	.698275	17	2	.704322	17	2	.710	
3	.686010	27	3	.692230	27	3	.698362	26	3	.704408	26	3	.710	
4	.686100	36	4	.692318	35	4	.698448	35	4	.704494	34	4	.710	
5	.686189	45	5	.692406	44	5	.698535	44	5	.704579	43	5	.710	
6	.686279	54	6	.692494	53	6	.698622	52	6	.704665	52	6	.710	
7	.686368	63	7	.692583	62	7	.698709	61	7	.704751	60	7	.710	
8	.686457	72	8	.692671	71	8	.698796	70	8	.704837	69	8	.710	
9	.686547	81	9	.692759	80	9	.698883	79	9	.704922	77	9	.710	
4860	.686636	00	4930	.692847	00	5000	.698970	00	5070	.705008	00	5140	.710	
1	.686726	09	1	.692935	09	1	.699057	09	1	.705094	09	1	.711	
2	.686815	18	2	.693023	18	2	.699144	17	2	.705179	17	2	.711	
3	.686904	27	3	.693111	26	3	.699230	26	3	.705265	26	3	.711	
4	.686994	36	4	.693199	35	4	.699317	35	4	.705350	34	4	.711	
5	.687083	45	5	.693287	44	5	.699404	43	5	.705436	43	5	.711	
6	.687172	54	6	.693375	53	6	.699491	52	6	.705522	52	6	.711	
7	.687261	63	7	.693463	62	7	.699578	61	7	.705607	60	7	.711	
8	.687351	72	8	.693551	70	8	.699664	70	8	.705693	69	8	.711	
9	.687440	81	9	.693639	79	9	.699751	78	9	.705778	77	9	.711	
4870	.687529	00	4940	.693727	00	5010	.699838	00	5080	.705864	00	5150	.711	
1	.687618	09	1	.693815	09	1	.699924	09	1	.705949	09	1	.711	
2	.687707	18	2	.693903	18	2	.700011	17	2	.706035	17	2	.711	
3	.687796	27	3	.693991	26	3	.700098	26	3	.706120	26	3	.712	
4	.687885	36	4	.694078	35	4	.700184	35	4	.706205	34	4	.712	
5	.687975	45	5	.694166	44	5	.700271	43	5	.706291	43	5	.712	
6	.688064	54	6	.694254	53	6	.700357	52	6	.706376	51	6	.712	
7	.688153	62	7	.694342	62	7	.700444	61	7	.706462	60	7	.712	
8	.688242	72	8	.694430	70	8	.700531	70	8	.706547	68	8	.712	
9	.688331	80	9	.694517	79	9	.700617	78	9	.706632	77	9	.712	
4880	.688420	00	4950	.694605	00	5020	.700704	00	5090	.706718	00	5160	.712	
1	.688509	09	1	.694693	09	1	.700790	09	1	.706803	09	1	.712	
2	.688598	18	2	.694781	18	2	.700877	17	2	.706888	17	2	.712	
3	.688687	27	3	.694868	26	3	.700963	26	3	.706974	26	3	.712	
4	.688776	36	4	.694956	35	4	.701050	35	4	.707059	34	4	.712	
5	.688865	45	5	.695044	44	5	.701136	43	5	.707144	43	5	.713	
6	.688953	54	6	.695131	53	6	.701222	52	6	.707229	51	6	.713	
7	.689042	62	7	.695219	62	7	.701309	61	7	.707315	60	7	.713	
8	.689131	72	8	.695306	70	8	.701395	70	8	.707400	68	8	.713	
9	.689220	80	9	.695394	79	9	.701482	78	9	.707485	77	9	.713	
4890	.689309	00	4960	.695482	00	5030	.701568	00	5100	.707570	00	5170	.713	
1	.689398	09	1	.695569	09	1	.701654	09	1	.707655	09	1	.713	
2	.689486	18	2	.695657	17	2	.701741	17	2	.707740	17	2	.713	
3	.689575	27	3	.695744	26	3	.701827	26	3	.707826	26	3	.713	
4	.689664	36	4	.695832	35	4	.701913	35	4	.707911	34	4	.713	
5	.689753	45	5	.695919	44	5	.701999	43	5	.707996	43	5	.713	
6	.689841	54	6	.696007	52	6	.702086	52	6	.708081	51	6	.713	
7	.689930	62	7	.696094	61	7	.702172	61	7	.708166	60	7	.714	
8	.690019	72	8	.696182	70	8	.702258	70	8	.708251	68	8	.714	
9	.690107	80	9	.696269	79	9	.702344	78	9	.708336	77	9	.714	
4900	.690196	00	4970	.696356	00	5040	.702430	00	5110	.708421	00	5180	.714	
1	.690285	09	1	.696444	09	1	.702517	09	1	.708506	09	1	.714	
2	.690373	18	2	.696531	17	2	.702603	17	2	.708591	17	2	.714	
3	.690462	27	3	.696618	26	3	.702689	26	3	.708676	26	3	.714	
4	.690550	35	4	.696706	35	4	.702775	34	4	.708761	34	4	.714	
5	.690639	44	5	.696793	44	5	.702861	43	5	.708846	43	5	.714	
6	.690727	53	6	.696880	52	6	.702947	52	6	.708931	51	6	.714	
7	.690816	62	7	.696968	61	7	.703033	60	7	.709015	60	7	.714	
8	.690905	71	8	.697055	70	8	.703119	69	8	.709100	68	8	.715	
9	.690993	80	9	.697142	79	9	.703205	77	9	.709185	77	9	.715	
4910	.691081	00	4980	.697229	00	5050	.703291	00	5120	.709270	00	5190	.715	
1	.691170	09	1	.697316	09	1	.703377	09	1	.709355	08	1	.715	
2	.691258	18	2	.697404	17	2	.703463	17	2	.709440	17	2	.715	
3	.691347	27	3	.697491	26	3	.703549	26	3	.709524	25	3	.715	
4	.691435	35	4	.697578	35	4	.703635	34	4	.709609	34	4	.715	
5	.691523	44	5	.697665	44	5	.703721	43	5	.709694	42	5	.715	
6	.691612	53	6	.697752	52	6	.703807	52	6	.709779	51	6	.715	
7	.691700	62	7	.697839	61	7	.703893	60	7	.709863	59	7	.715	
8	.691788	71	8	.697926	70	8	.703979	69	8	.709948	68	8	.715	
9	.691877	80	9	.698013	79	9	.704065	77	9	.710033	76	9	.715	

Log. .716003 to .744215

No. 5200 to 5549.

(u.)

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
5200	.716003	00	5270	.721811	00	5340	.727541	00	5410	.733197	00	5480	.738781	00	5550	.744365	00
1	.716087	08	1	.721893	08	1	.727623	08	1	.733277	08	1	.738860	08	1	.744448	08
2	.716170	17	2	.721975	16	2	.727704	16	2	.733358	16	2	.738939	16	2	.744531	16
3	.716254	25	3	.722058	25	3	.727785	24	3	.733438	24	3	.739018	24	3	.744614	24
4	.716337	34	4	.722140	33	4	.727866	33	4	.733518	32	4	.739097	32	4	.744697	32
5	.716421	42	5	.722222	41	5	.727948	41	5	.733598	40	5	.739177	40	5	.744780	40
6	.716504	50	6	.722305	49	6	.728029	49	6	.733679	48	6	.739256	47	6	.744863	47
7	.716588	59	7	.722387	58	7	.728110	57	7	.733759	56	7	.739335	55	7	.744946	55
8	.716671	67	8	.722469	66	8	.728191	65	8	.733839	64	8	.739414	63	8	.745029	63
9	.716754	76	9	.722552	74	9	.728273	73	9	.733919	72	9	.739493	71	9	.745112	71
5210	.716838	00	5280	.722634	00	5350	.728354	00	5420	.733999	00	5490	.739572	00	5560	.745195	00
1	.716921	08	1	.722716	08	1	.728435	08	1	.734079	08	1	.739651	08	1	.745278	08
2	.717004	17	2	.722798	16	2	.728516	16	2	.734159	16	2	.739730	16	2	.745361	16
3	.717088	25	3	.722881	25	3	.728597	24	3	.734240	24	3	.739810	24	3	.745444	24
4	.717171	33	4	.722963	33	4	.728678	33	4	.734320	32	4	.739889	32	4	.745527	32
5	.717254	42	5	.723045	41	5	.728759	41	5	.734400	40	5	.739968	40	5	.745610	40
6	.717338	50	6	.723127	49	6	.728841	49	6	.734480	48	6	.740047	47	6	.745693	47
7	.717421	58	7	.723209	58	7	.728922	57	7	.734560	56	7	.740126	55	7	.745776	55
8	.717504	66	8	.723291	66	8	.729003	65	8	.734640	64	8	.740205	63	8	.745859	63
9	.717587	75	9	.723374	74	9	.729084	73	9	.734720	72	9	.740284	71	9	.745942	71
5220	.717670	00	5290	.723456	00	5360	.729165	00	5430	.734800	00	5500	.740363	00	5570	.745925	00
1	.717754	08	1	.723538	08	1	.729246	08	1	.734880	08	1	.740442	08	1	.746008	08
2	.717837	17	2	.723620	16	2	.729327	16	2	.734960	16	2	.740521	16	2	.746091	16
3	.717920	25	3	.723702	25	3	.729408	24	3	.735040	24	3	.740600	24	3	.746174	24
4	.718003	33	4	.723784	33	4	.729489	32	4	.735120	32	4	.740678	32	4	.746257	32
5	.718086	42	5	.723866	41	5	.729570	41	5	.735200	40	5	.740757	40	5	.746340	40
6	.718169	50	6	.723948	49	6	.729651	49	6	.735279	48	6	.740836	47	6	.746423	47
7	.718252	58	7	.724030	57	7	.729732	57	7	.735359	56	7	.740915	55	7	.746506	55
8	.718336	66	8	.724112	66	8	.729812	65	8	.735439	64	8	.741009	63	8	.746589	63
9	.718419	75	9	.724194	74	9	.729893	73	9	.735519	72	9	.741073	71	9	.746672	71
5230	.718502	00	5300	.724276	00	5370	.729974	00	5440	.735599	00	5510	.741152	00	5580	.746755	00
1	.718585	08	1	.724358	08	1	.730055	08	1	.735679	08	1	.741230	08	1	.746838	08
2	.718668	17	2	.724440	16	2	.730136	16	2	.735758	16	2	.741309	16	2	.746921	16
3	.718751	25	3	.724522	25	3	.730217	24	3	.735838	24	3	.741388	24	3	.747004	24
4	.718834	33	4	.724603	33	4	.730298	32	4	.735918	32	4	.741467	32	4	.747087	32
5	.718917	42	5	.724685	41	5	.730378	40	5	.735998	40	5	.741545	40	5	.747170	40
6	.719000	50	6	.724767	49	6	.730459	49	6	.736078	48	6	.741624	47	6	.747253	47
7	.719083	58	7	.724849	57	7	.730540	57	7	.736157	56	7	.741703	55	7	.747336	55
8	.719166	66	8	.724931	66	8	.730621	65	8	.736237	64	8	.741782	63	8	.747419	63
9	.719248	75	9	.725013	74	9	.730701	73	9	.736317	72	9	.741860	71	9	.747502	71
5240	.719331	00	5310	.725094	00	5380	.730782	00	5450	.736396	00	5520	.741939	00	5590	.747585	00
1	.719414	08	1	.725176	08	1	.730863	08	1	.736476	08	1	.742018	08	1	.747668	08
2	.719497	17	2	.725258	16	2	.730944	16	2	.736556	16	2	.742096	16	2	.747751	16
3	.719580	25	3	.725340	25	3	.731024	24	3	.736635	24	3	.742175	24	3	.747834	24
4	.719663	33	4	.725422	33	4	.731105	32	4	.736715	32	4	.742254	32	4	.747917	32
5	.719745	41	5	.725503	41	5	.731186	40	5	.736795	40	5	.742332	39	5	.748000	39
6	.719828	50	6	.725585	49	6	.731266	49	6	.736874	48	6	.742411	47	6	.748083	47
7	.719911	58	7	.725667	57	7	.731347	57	7	.736954	56	7	.742489	55	7	.748166	55
8	.719994	66	8	.725748	66	8	.731428	65	8	.737033	64	8	.742568	63	8	.748249	63
9	.720077	75	9	.725830	74	9	.731508	73	9	.737113	72	9	.742647	71	9	.748332	71
5250	.720159	00	5320	.725912	00	5390	.731589	00	5460	.737193	00	5530	.742725	00	5600	.748415	00
1	.720242	08	1	.725993	08	1	.731669	08	1	.737272	08	1	.742804	08	1	.748498	08
2	.720325	17	2	.726075	16	2	.731750	16	2	.737352	16	2	.742882	16	2	.748581	16
3	.720407	25	3	.726156	24	3	.731830	24	3	.737431	24	3	.742961	24	3	.748664	24
4	.720490	33	4	.726238	33	4	.731911	32	4	.737511	32	4	.743039	31	4	.748747	31
5	.720573	41	5	.726320	41	5	.731991	40	5	.737590	40	5	.743118	39	5	.748830	39
6	.720655	50	6	.726401	49	6	.732072	48	6	.737670	48	6	.743196	47	6	.748913	47
7	.720738	58	7	.726483	57	7	.732152	56	7	.737749	56	7	.743274	55	7	.749000	55
8	.720821	66	8	.726564	65	8	.732233	64	8	.737828	64	8	.743353	63	8	.749083	63
9	.720903	75	9	.726646	73	9	.732313	72	9	.737908	72	9	.743431	71	9	.749166	71
5260	.720986	00	5330	.726727	00	5400	.732394	00	5470	.737993	00	5540	.743510	00	5610	.749249	00
1	.721068	08	1	.726809	08	1	.732474	08	1	.738072	08	1	.743588	08	1	.749332	08
2	.721151	16	2	.726890	16	2	.732555	16	2	.738146	16	2	.743666	16	2	.749415	16
3	.721233	25	3	.726972	24	3	.732635	24	3	.738225	24	3	.743745	23	3	.749498	23
4	.721316	33	4	.727053	33	4	.732715	32	4	.738305	32	4	.743823	31	4	.749581	31
5	.721398	41	5	.727134	41	5	.732796	40	5	.738384	40	5	.743902	39	5	.749664	39
6	.721481	49	6	.727216	49	6	.732876	48	6	.738463	48	6	.743980	47	6	.749747	47
7	.721563	58	7	.727297	57	7	.732956	56	7	.738543	56	7	.744058	55	7	.749830	55
8	.721646	66	8	.727379	65	8	.733037	64	8	.738622	64	8	.744136	63	8	.749913	63
9	.721728	74	9	.727460	73	9	.733117	72	9	.738701	72	9	.744215	71	9	.750000	71

Log. .744293 to .770778

No. 5550 to 5899.

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
5550	.744293	00	5620	.749736	00	5690	.755112	00	5760	.760422	00	5830	.7657	
1	.744371	08	1	.749814	08	1	.755189	08	1	.760498	08	1	.7657	
2	.744449	16	2	.749891	16	2	.755265	15	2	.760573	15	2	.7658	
3	.744528	23	3	.749968	23	3	.755341	23	3	.760649	23	3	.7658	
4	.744606	31	4	.750045	31	4	.755417	30	4	.760724	30	4	.7659	
5	.744684	39	5	.750122	39	5	.755494	38	5	.760799	38	5	.7660	
6	.744762	47	6	.750200	47	6	.755570	46	6	.760875	45	6	.7661	
7	.744840	55	7	.750277	54	7	.755646	53	7	.760950	53	7	.7661	
8	.744918	63	8	.750354	62	8	.755722	61	8	.761025	60	8	.7662	
9	.744997	71	9	.750431	70	9	.755799	60	9	.761100	68	9	.7663	
5560	.745075	00	5630	.750508	00	5700	.755875	00	5770	.761176	00	5840	.7664	
1	.745153	08	1	.750585	08	1	.755951	08	1	.761251	08	1	.7664	
2	.745231	16	2	.750663	16	2	.756027	15	2	.761326	15	2	.7665	
3	.745309	23	3	.750740	23	3	.756103	23	3	.761402	23	3	.7666	
4	.745387	31	4	.750817	31	4	.756179	30	4	.761477	30	4	.7667	
5	.745465	39	5	.750894	39	5	.756256	38	5	.761552	38	5	.7667	
6	.745543	47	6	.750971	47	6	.756332	46	6	.761627	45	6	.7668	
7	.745621	55	7	.751048	54	7	.756408	53	7	.761702	53	7	.7669	
8	.745699	62	8	.751125	62	8	.756484	61	8	.761777	60	8	.7670	
9	.745777	70	9	.751202	70	9	.756560	60	9	.761853	68	9	.7670	
5570	.745855	00	5640	.751279	00	5710	.756636	00	5780	.761928	00	5850	.7671	
1	.745933	08	1	.751356	08	1	.756712	08	1	.762003	08	1	.7672	
2	.746011	16	2	.751433	15	2	.756788	15	2	.762078	15	2	.7673	
3	.746089	23	3	.751510	23	3	.756864	23	3	.762153	23	3	.7673	
4	.746167	31	4	.751587	30	4	.756940	30	4	.762228	30	4	.7674	
5	.746245	39	5	.751664	38	5	.757016	38	5	.762303	38	5	.7675	
6	.746323	47	6	.751741	46	6	.757092	46	6	.762378	45	6	.7676	
7	.746401	55	7	.751818	54	7	.757168	53	7	.762453	52	7	.7676	
8	.746478	62	8	.751895	62	8	.757244	61	8	.762528	60	8	.7677	
9	.746556	70	9	.751972	70	9	.757320	60	9	.762603	68	9	.7678	
5580	.746634	00	5650	.752048	00	5720	.757396	00	5790	.762679	00	5860	.7678	
1	.746712	08	1	.752125	08	1	.757472	08	1	.762754	08	1	.7679	
2	.746790	16	2	.752202	15	2	.757548	15	2	.762829	15	2	.7680	
3	.746868	23	3	.752279	23	3	.757624	23	3	.762903	22	3	.7681	
4	.746945	31	4	.752356	30	4	.757700	30	4	.762978	30	4	.7681	
5	.747023	39	5	.752433	38	5	.757775	38	5	.763053	38	5	.7682	
6	.747101	47	6	.752509	46	6	.757851	46	6	.763128	45	6	.7683	
7	.747179	55	7	.752586	54	7	.757927	53	7	.763203	52	7	.7684	
8	.747256	62	8	.752663	62	8	.758003	61	8	.763278	60	8	.7684	
9	.747334	70	9	.752740	70	9	.758079	68	9	.763353	68	9	.7685	
5590	.747412	00	5660	.752816	00	5730	.758155	00	5800	.763428	00	5870	.7686	
1	.747489	08	1	.752893	08	1	.758230	08	1	.763503	07	1	.7687	
2	.747567	16	2	.752970	15	2	.758306	15	2	.763578	15	2	.7687	
3	.747645	23	3	.753047	23	3	.758382	23	3	.763653	22	3	.7688	
4	.747722	31	4	.753123	30	4	.758458	30	4	.763727	30	4	.7689	
5	.747800	39	5	.753200	38	5	.758533	38	5	.763802	37	5	.7690	
6	.747878	47	6	.753277	46	6	.758609	46	6	.763877	45	6	.7690	
7	.747955	54	7	.753353	54	7	.758685	53	7	.763952	52	7	.7691	
8	.748033	62	8	.753430	62	8	.758760	61	8	.764027	60	8	.7692	
9	.748110	70	9	.753506	70	9	.758836	68	9	.764101	67	9	.7693	
5600	.748188	00	5670	.753583	00	5740	.758912	00	5810	.764176	00	5880	.7693	
1	.748266	08	1	.753660	08	1	.758987	08	1	.764251	07	1	.7694	
2	.748343	16	2	.753736	15	2	.759063	15	2	.764326	15	2	.7695	
3	.748421	23	3	.753813	23	3	.759139	23	3	.764400	22	3	.7695	
4	.748498	31	4	.753889	30	4	.759214	30	4	.764475	30	4	.7696	
5	.748576	39	5	.753966	38	5	.759290	38	5	.764550	37	5	.7697	
6	.748653	47	6	.754042	46	6	.759366	45	6	.764624	45	6	.7698	
7	.748731	54	7	.754119	54	7	.759441	53	7	.764699	52	7	.7698	
8	.748808	62	8	.754195	62	8	.759517	60	8	.764774	60	8	.7699	
9	.748885	70	9	.754272	70	9	.759592	68	9	.764848	67	9	.7700	
5610	.748963	00	5680	.754348	00	5750	.759668	00	5820	.764923	00	5890	.7701	
1	.749040	08	1	.754425	08	1	.759743	08	1	.764998	07	1	.7701	
2	.749118	16	2	.754501	15	2	.759819	15	2	.765072	15	2	.7702	
3	.749195	23	3	.754578	23	3	.759894	23	3	.765147	22	3	.7703	
4	.749272	31	4	.754654	30	4	.759970	30	4	.765221	30	4	.7704	
5	.749350	39	5	.754730	38	5	.760045	38	5	.765296	37	5	.7704	
6	.749427	47	6	.754807	46	6	.760121	45	6	.765370	45	6	.7705	
7	.749504	54	7	.754883	53	7	.760196	53	7	.765445	52	7	.7706	
8	.749582	62	8	.754960	61	8	.760272	60	8	.765519	60	8	.7707	
9	.749659	70	9	.755036	69	9	.760347	68	9	.765594	67	9	.7707	

Log. .770852 to .795810

No. 5900 to 6249.

(u.)

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
5900	.770852	00	5970	.775974	00	6040	.781037	00	6110	.786041	00	6180	.790988	00
1	.770926	07	1	.776047	07	1	.781109	07	1	.786112	07	1	.791059	07
2	.770999	15	2	.776120	15	2	.781181	14	2	.786183	14	2	.791129	14
3	.771073	22	3	.776192	22	3	.781253	22	3	.786254	21	3	.791199	21
4	.771146	30	4	.776265	29	4	.781324	29	4	.786325	28	4	.791269	28
5	.771220	37	5	.776338	37	5	.781396	36	5	.786396	36	5	.791340	35
6	.771293	45	6	.776411	44	6	.781468	43	6	.786467	43	6	.791410	42
7	.771367	52	7	.776483	51	7	.781540	50	7	.786538	50	7	.791480	49
8	.771440	59	8	.776556	59	8	.781612	58	8	.786609	57	8	.791550	56
9	.771514	67	9	.776629	66	9	.781684	65	9	.786680	64	9	.791620	63
5910	.771587	00	5980	.776701	00	6050	.781755	00	6120	.786751	00	6190	.791691	00
1	.771661	07	1	.776774	07	1	.781827	07	1	.786822	07	1	.791761	07
2	.771734	15	2	.776846	14	2	.781899	14	2	.786893	14	2	.791831	14
3	.771808	22	3	.776919	22	3	.781971	22	3	.786964	21	3	.791901	21
4	.771881	30	4	.776992	29	4	.782042	29	4	.787035	28	4	.791971	28
5	.771955	37	5	.777064	36	5	.782114	36	5	.787106	36	5	.792041	35
6	.772028	44	6	.777137	43	6	.782186	43	6	.787177	43	6	.792111	42
7	.772102	52	7	.777209	51	7	.782258	50	7	.787248	00	7	.792181	49
8	.772175	59	8	.777282	58	8	.782329	58	8	.787319	57	8	.792252	56
9	.772248	67	9	.777354	65	9	.782401	65	9	.787390	64	9	.792322	63
5920	.772322	00	5990	.777427	00	6060	.782473	00	6130	.787460	00	6200	.792392	00
1	.772395	07	1	.777499	07	1	.782544	07	1	.787531	07	1	.792462	07
2	.772468	15	2	.777572	14	2	.782616	14	2	.787602	14	2	.792532	14
3	.772542	22	3	.777644	22	3	.782688	21	3	.787673	21	3	.792602	21
4	.772615	29	4	.777717	29	4	.782759	29	4	.787744	28	4	.792672	28
5	.772688	37	5	.777789	36	5	.782831	36	5	.787815	35	5	.792742	35
6	.772762	44	6	.777862	43	6	.782902	43	6	.787885	42	6	.792812	42
7	.772835	51	7	.777934	51	7	.782974	50	7	.787956	49	7	.792882	49
8	.772908	59	8	.778006	58	8	.783046	57	8	.788027	56	8	.792952	56
9	.772981	66	9	.778079	65	9	.783117	64	9	.788098	63	9	.793022	63
5930	.773055	00	6000	.778151	00	6070	.783189	00	6140	.788168	00	6210	.793092	00
1	.773128	07	1	.778224	07	1	.783260	07	1	.788239	07	1	.793161	07
2	.773201	15	2	.778296	14	2	.783332	14	2	.788310	14	2	.793231	14
3	.773274	22	3	.778368	22	3	.783403	21	3	.788380	21	3	.793301	21
4	.773347	29	4	.778441	29	4	.783475	29	4	.788451	28	4	.793371	28
5	.773421	37	5	.778513	36	5	.783546	36	5	.788522	35	5	.793441	35
6	.773494	44	6	.778585	43	6	.783618	43	6	.788593	42	6	.793511	42
7	.773567	51	7	.778658	51	7	.783689	50	7	.788663	49	7	.793581	49
8	.773640	59	8	.778730	58	8	.783761	57	8	.788734	56	8	.793651	56
9	.773713	66	9	.778802	65	9	.783832	64	9	.788804	63	9	.793721	63
5940	.773786	00	6010	.778874	00	6080	.783904	00	6150	.788875	00	6220	.793790	00
1	.773860	07	1	.778947	07	1	.783975	07	1	.788946	07	1	.793860	07
2	.773933	15	2	.779019	14	2	.784046	14	2	.789016	14	2	.793930	14
3	.774006	22	3	.779091	22	3	.784118	21	3	.789087	21	3	.794000	21
4	.774079	29	4	.779163	29	4	.784189	29	4	.789157	28	4	.794070	28
5	.774152	37	5	.779236	36	5	.784261	36	5	.789228	35	5	.794139	35
6	.774225	44	6	.779308	43	6	.784332	43	6	.789299	42	6	.794209	42
7	.774298	51	7	.779380	51	7	.784403	50	7	.789369	49	7	.794279	49
8	.774371	59	8	.779452	58	8	.784475	57	8	.789440	56	8	.794349	56
9	.774444	66	9	.779524	65	9	.784546	64	9	.789510	63	9	.794418	63
5950	.774517	00	6020	.779596	00	6090	.784617	00	6160	.789581	00	6230	.794488	00
1	.774590	07	1	.779669	07	1	.784689	07	1	.789651	07	1	.794558	07
2	.774663	15	2	.779741	14	2	.784760	14	2	.789722	14	2	.794627	14
3	.774736	22	3	.779813	22	3	.784831	21	3	.789792	21	3	.794697	21
4	.774809	29	4	.779885	29	4	.784902	29	4	.789863	28	4	.794767	28
5	.774882	37	5	.779957	36	5	.784974	36	5	.789933	35	5	.794836	35
6	.774955	44	6	.780029	43	6	.785045	43	6	.790003	42	6	.794906	42
7	.775028	51	7	.780101	50	7	.785116	50	7	.790074	49	7	.794976	49
8	.775100	59	8	.780173	58	8	.785187	57	8	.790144	56	8	.795045	56
9	.775173	66	9	.780245	65	9	.785259	64	9	.790215	63	9	.795115	63
5960	.775246	00	6030	.780317	00	6100	.785330	00	6170	.790285	00	6240	.795185	00
1	.775319	07	1	.780389	07	1	.785401	07	1	.790355	07	1	.795254	07
2	.775392	15	2	.780461	14	2	.785472	14	2	.790426	14	2	.795324	14
3	.775465	22	3	.780533	22	3	.785543	21	3	.790496	21	3	.795393	21
4	.775538	29	4	.780605	29	4	.785614	28	4	.790567	28	4	.795463	28
5	.775610	37	5	.780677	36	5	.785686	36	5	.790637	35	5	.795532	35
6	.775683	44	6	.780749	43	6	.785757	43	6	.790707	42	6	.795602	42
7	.775756	51	7	.780821	50	7	.785828	50	7	.790778	49	7	.795671	49
8	.775829	59	8	.780893	58	8	.785899	57	8	.790848	56	8	.795741	56
9	.775902	66	9	.780965	65	9	.785970	64	9	.790918	63	9	.795810	63

Log. .795880 to .819478												No. 6250 to 6599.												(u.)																	
No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.			
6250	.795880	00	6320	.800717	00	6390	.805501	00	6460	.810232	00	6530	.814913	00	1	.814980	07	1	.815046	13	2	.815113	20	3	.815179	27	4	.815246	34	5	.815312	41	6	.815378	48	7	.815445	55	8	.815511	62
1	.795949	07	1	.800786	07	1	.805569	07	1	.810300	07	1	.814980	07	2	.815046	13	2	.815113	20	3	.815179	27	4	.815246	34	5	.815312	41	6	.815378	48	7	.815445	55	8	.815511	62	9	.815578	69
2	.796019	14	2	.800854	14	2	.805637	14	2	.810367	13	2	.814980	13	3	.815046	20	3	.815113	27	4	.815179	34	5	.815246	41	6	.815312	48	7	.815378	55	8	.815445	62	9	.815511	69	10	.815578	76
3	.796088	21	3	.800923	21	3	.805705	20	3	.810434	20	3	.815046	20	4	.815113	27	4	.815179	34	5	.815246	41	6	.815312	48	7	.815378	55	8	.815445	62	9	.815511	69	10	.815578	76	11	.815644	83
4	.796158	28	4	.800992	28	4	.805773	27	4	.810501	27	4	.815046	27	5	.815113	34	5	.815179	41	6	.815246	48	7	.815312	55	8	.815378	62	9	.815445	69	10	.815511	76	11	.815578	83	12	.815644	90
5	.796227	35	5	.801060	34	5	.805840	34	5	.810568	33	5	.815046	33	6	.815113	40	6	.815179	47	7	.815246	54	8	.815312	61	9	.815378	68	10	.815445	75	11	.815511	82	12	.815578	89	13	.815644	96
6	.796297	42	6	.801129	41	6	.805908	41	6	.810636	40	6	.815046	40	7	.815113	47	7	.815179	54	8	.815246	61	9	.815312	68	10	.815378	75	11	.815445	82	12	.815511	89	13	.815578	96	14	.815644	103
7	.796366	49	7	.801198	48	7	.805976	48	7	.810703	47	7	.815046	47	8	.815113	54	8	.815179	61	9	.815246	68	10	.815312	75	11	.815378	82	12	.815445	89	13	.815511	96	14	.815578	103	15	.815644	110
8	.796436	56	8	.801266	55	8	.806044	54	8	.810770	54	8	.815046	54	9	.815113	61	9	.815179	68	10	.815246	75	11	.815312	82	12	.815378	89	13	.815445	96	14	.815511	103	15	.815578	110	16	.815644	117
9	.796505	63	9	.801335	62	9	.806112	61	9	.810837	60	9	.815046	60	10	.815113	67	10	.815179	74	11	.815246	81	12	.815312	88	13	.815378	95	14	.815445	102	15	.815511	109	16	.815578	116	17	.815644	123
6260	.796574	00	6330	.801404	00	6400	.806180	00	6470	.810904	00	6540	.815578	00	1	.815644	07	1	.815710	13	2	.815777	20	3	.815843	27	4	.815910	34	5	.815976	41	6	.816042	48	7	.816109	55	8	.816175	62
1	.796644	07	1	.801472	07	1	.806248	07	1	.810971	07	1	.815578	07	2	.815644	13	2	.815710	20	3	.815777	27	4	.815843	34	5	.815910	41	6	.815976	48	7	.816042	55	8	.816109	62	9	.816175	69
2	.796713	14	2	.801541	14	2	.806316	14	2	.811038	13	2	.815578	13	3	.815644	20	3	.815710	27	4	.815777	34	5	.815843	41	6	.815910	48	7	.815976	55	8	.816042	62	9	.816109	69	10	.816175	76
3	.796782	21	3	.801609	21	3	.806383	20	3	.811106	20	3	.815578	20	4	.815644	27	4	.815710	34	5	.815777	41	6	.815843	48	7	.815910	55	8	.815976	62	9	.816042	69	10	.816109	76	11	.816175	83
4	.796852	27	4	.801678	27	4	.806451	27	4	.811173	27	4	.815578	27	5	.815644	34	5	.815710	41	6	.815777	48	7	.815843	55	8	.815910	62	9	.815976	69	10	.816042	76	11	.816109	83	12	.816175	90
5	.796921	35	5	.801747	34	5	.806519	34	5	.811240	33	5	.815578	33	6	.815644	40	6	.815710	47	7	.815777	54	8	.815843	61	9	.815910	68	10	.815976	75	11	.816042	82	12	.816109	89	13	.816175	96
6	.796990	42	6	.801815	41	6	.806587	41	6	.811307	40	6	.815578	40	7	.815644	47	7	.815710	54	8	.815777	61	9	.815843	68	10	.815910	75	11	.815976	82	12	.816042	89	13	.816109	96	14	.816175	103
7	.797060	49	7	.801884	48	7	.806655	48	7	.811374	47	7	.815578	47	8	.815644	54	8	.815710	61	9	.815777	68	10	.815843	75	11	.815910	82	12	.815976	89	13	.816042	96	14	.816109	103	15	.816175	110
8	.797129	56	8	.801952	55	8	.806722	54	8	.811441	54	8	.815578	54	9	.815644	61	9	.815710	68	10	.815777	75	11	.815843	82	12	.815910	89	13	.815976	96	14	.816042	103	15	.816109	110	16	.816175	117
9	.797198	62	9	.802021	62	9	.806790	61	9	.811508	60	9	.815578	60	10	.815644	67	10	.815710	74	11	.815777	81	12	.815843	88	13	.815910	95	14	.815976	102	15	.816042	109	16	.816109	116	17	.816175	123
6270	.797267	00	6340	.802089	00	6410	.806858	00	6480	.811575	00	6550	.816241	00	1	.816308	07	1	.816374	13	2	.816440	20	3	.816506	27	4	.816573	34	5	.816639	41	6	.816705	48	7	.816771	55	8	.816838	62
1	.797337	07	1	.802158	07	1	.806926	07	1	.811642	07	1	.816241	07	2	.816308	13	2	.816374	20	3	.816440	27	4	.816506	34	5	.816573	41	6	.816639	48	7	.816705	55	8	.816771	62	9	.816838	69
2	.797406	14	2	.802226	14	2	.806993	14	2	.811709	13	2	.816241	13	3	.816308	20	3	.816374	27	4	.816440	34	5	.816506	41	6	.816573	48	7	.816639	55	8	.816705	62	9	.816771	69	10	.816838	76
3	.797475	21	3	.802295	21	3	.807061	20	3	.811776	20	3	.816241	20	4	.816308	27	4	.816374	34	5	.816440	41	6	.816506	48	7	.816573	55	8	.816639	62	9	.816705	69	10	.816771	76	11	.816838	83
4	.797544	27	4	.802363	27	4	.807129	27	4	.811843	27	4	.816241	27	5	.816308	34	5	.816374	41	6	.816440	48	7	.816506	55	8	.816573	62	9	.816639	69	10	.816705	76	11	.816771	83	12	.816838	90
5	.797614	35	5	.802432	34	5	.807197	34	5	.811910	33	5	.816241	33	6	.816308	40	6	.816374	47	7	.816440	54	8	.816506	61	9	.816573	68	10	.816639	75	11	.816705	82	12	.816771	89	13	.816838	96
6	.797683	42	6	.802500	41	6	.807264	41	6	.811977	40	6	.816241	40	7	.816308	47	7	.816374	54	8	.816440	61	9	.816506	68	10	.816573	75	11	.816639	82	12	.816705	89	13	.816771	96	14	.816838	103
7	.797752	49	7	.802568	48	7	.807332	48	7	.812044	47	7	.816241	47	8	.816308	54	8	.816374	61	9	.816440	68	10	.816506	75	11	.816573	82	12	.816639	89	13	.816705	96	14	.816771	103	15	.816838	110
8	.797821	56	8	.802637	55	8	.807400	54	8	.812111	54	8	.816241	54	9	.816308	61	9	.816374	68	10	.816440	75	11	.816506	82	12	.816573	89	13	.816639	96	14	.816705	103	15	.816771	110	16	.816838	117
9	.797890	62	9	.802705	62	9	.807467	61	9	.812178	60	9	.816241	60	10	.816308	67	10	.816374	74	11	.816440	81	12	.816506	88	13	.816573	95	14	.816639	102	15	.816705	109	16	.816771	116	17	.816838	123
6280	.797960	00	6350	.802774	00	6420	.807535	00	6490	.812245	00	6560	.816904	00	1	.816970	07	1	.817036	13	2	.817102	20	3	.817169	27	4	.817235	34	5	.817301	41	6	.817367	48	7	.817433	55	8	.817494	

Log. 819514 to .841922

No. 6600 to 6949.

(u.)

Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
00	6670	.824126	00	6740	.828060	00	6810	.833147	00	6880	.837588	00
07	1	.824191	06	1	.828724	06	1	.833211	06	1	.837652	06
13	2	.824256	13	2	.828789	13	2	.833275	13	2	.837715	13
20	3	.824321	19	3	.828853	19	3	.833338	19	3	.837778	19
26	4	.824386	26	4	.828918	26	4	.833402	26	4	.837841	26
33	5	.824451	32	5	.828982	32	5	.833466	32	5	.837904	32
40	6	.824516	39	6	.829046	39	6	.833530	38	6	.837967	38
46	7	.824581	45	7	.829111	45	7	.833593	45	7	.838030	44
53	8	.824646	52	8	.829175	52	8	.833657	51	8	.838093	50
59	9	.824711	58	9	.829239	58	9	.833721	58	9	.838156	57
00	6680	.824776	00	6750	.829304	00	6820	.833784	00	6890	.838219	00
07	1	.824841	06	1	.829368	06	1	.833848	06	1	.838282	06
13	2	.824906	13	2	.829432	13	2	.833912	13	2	.838345	13
20	3	.824971	19	3	.829497	19	3	.833975	19	3	.838408	19
26	4	.825036	26	4	.829561	26	4	.834039	26	4	.838471	25
33	5	.825101	32	5	.829625	32	5	.834103	32	5	.838534	32
40	6	.825166	39	6	.829690	39	6	.834166	38	6	.838597	38
46	7	.825231	45	7	.829754	45	7	.834230	45	7	.838660	44
53	8	.825296	52	8	.829818	52	8	.834293	51	8	.838723	50
59	9	.825361	58	9	.829882	58	9	.834357	58	9	.838786	57
00	6690	.825426	00	6760	.829947	00	6830	.834421	00	6900	.838849	00
07	1	.825491	06	1	.830011	06	1	.834484	06	1	.838912	06
13	2	.825556	13	2	.830075	13	2	.834548	13	2	.838975	13
20	3	.825621	19	3	.830139	19	3	.834611	19	3	.839038	19
26	4	.825686	26	4	.830204	26	4	.834675	25	4	.839101	25
33	5	.825751	32	5	.830268	32	5	.834738	32	5	.839164	31
40	6	.825815	39	6	.830332	38	6	.834802	38	6	.839227	38
46	7	.825880	45	7	.830396	45	7	.834866	45	7	.839289	44
53	8	.825945	52	8	.830460	51	8	.834929	51	8	.839352	50
59	9	.826010	58	9	.830524	58	9	.834993	58	9	.839415	57
00	6700	.826075	00	6770	.830589	00	6840	.835056	00	6910	.839478	00
07	1	.826140	06	1	.830653	06	1	.835120	06	1	.839541	06
13	2	.826204	13	2	.830717	13	2	.835183	13	2	.839604	13
20	3	.826269	19	3	.830781	19	3	.835246	19	3	.839667	19
26	4	.826334	26	4	.830845	26	4	.835310	26	4	.839729	25
33	5	.826399	32	5	.830909	32	5	.835373	32	5	.839792	31
39	6	.826463	39	6	.830973	38	6	.835437	38	6	.839855	38
46	7	.826528	45	7	.831037	45	7	.835500	45	7	.839918	44
52	8	.826593	52	8	.831102	51	8	.835564	51	8	.839981	50
59	9	.826658	58	9	.831166	58	9	.835627	58	9	.840043	57
00	6710	.826722	00	6780	.831230	00	6850	.835691	00	6920	.840106	00
07	1	.826787	06	1	.831294	06	1	.835754	06	1	.840169	06
13	2	.826852	13	2	.831358	13	2	.835817	13	2	.840232	13
20	3	.826917	19	3	.831422	19	3	.835881	19	3	.840294	19
26	4	.826981	26	4	.831486	26	4	.835944	26	4	.840357	25
33	5	.827046	32	5	.831550	32	5	.836007	32	5	.840420	31
39	6	.827111	39	6	.831614	38	6	.836071	38	6	.840482	38
46	7	.827175	45	7	.831678	45	7	.836134	45	7	.840545	44
52	8	.827240	52	8	.831742	51	8	.836197	51	8	.840608	50
59	9	.827305	58	9	.831806	58	9	.836261	58	9	.840671	57
00	6720	.827369	00	6790	.831870	00	6860	.836324	00	6930	.840733	00
07	1	.827434	06	1	.831934	06	1	.836387	06	1	.840796	06
13	2	.827498	13	2	.831998	13	2	.836451	13	2	.840859	13
20	3	.827563	19	3	.832062	19	3	.836514	19	3	.840921	19
26	4	.827628	26	4	.832125	26	4	.836577	26	4	.840984	25
33	5	.827692	32	5	.832189	32	5	.836640	32	5	.841046	31
39	6	.827757	39	6	.832253	38	6	.836704	38	6	.841109	38
46	7	.827821	45	7	.832317	45	7	.836767	45	7	.841172	44
52	8	.827886	52	8	.832381	51	8	.836830	51	8	.841234	50
59	9	.827950	58	9	.832445	58	9	.836893	58	9	.841297	56
00	6730	.828015	00	6800	.832509	00	6870	.836957	00	6940	.841359	00
07	1	.828080	06	1	.832573	06	1	.837020	06	1	.841422	06
13	2	.828144	13	2	.832637	13	2	.837083	13	2	.841485	13
20	3	.828209	19	3	.832700	19	3	.837146	19	3	.841547	19
26	4	.828273	26	4	.832764	26	4	.837209	25	4	.841610	25
33	5	.828338	32	5	.832828	32	5	.837273	32	5	.841672	31
39	6	.828402	39	6	.832892	38	6	.837336	38	6	.841735	38
46	7	.828466	45	7	.832956	45	7	.837399	44	7	.841797	44
52	8	.828531	52	8	.833019	51	8	.837462	51	8	.841860	50
59	9	.828595	58	9	.833083	58	9	.837525	57	9	.841922	56

Log. .841985 to .863263 No. 6950 to 7299.

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
6950	.841985	00	7020	.846337	00	7090	.850646	00	7160	.854913	00	7230	.85913	
1	.842047	06	1	.846399	06	1	.850707	06	1	.854974	06	1	.85919	
2	.842110	12	2	.846461	12	2	.850769	12	2	.855034	12	2	.85925	
3	.842172	19	3	.846523	19	3	.850830	18	3	.855095	18	3	.85931	
4	.842235	25	4	.846584	25	4	.850891	25	4	.855156	24	4	.85937	
5	.842297	31	5	.846646	31	5	.850952	31	5	.855216	30	5	.85943	
6	.842360	37	6	.846708	37	6	.851014	37	6	.855277	36	6	.85949	
7	.842422	44	7	.846770	43	7	.851075	43	7	.855337	42	7	.85955	
8	.842484	50	8	.846832	50	8	.851136	49	8	.855398	48	8	.85961	
9	.842547	56	9	.846893	56	9	.851197	55	9	.855459	54	9	.85967	
6960	.842609	00	7030	.846955	00	7100	.851258	00	7170	.855519	00	7240	.85973	
1	.842672	06	1	.847017	06	1	.851319	06	1	.855580	06	1	.85979	
2	.842734	12	2	.847079	12	2	.851381	12	2	.855640	12	2	.85985	
3	.842796	19	3	.847141	19	3	.851442	18	3	.855701	18	3	.85991	
4	.842859	25	4	.847202	25	4	.851503	25	4	.855761	24	4	.85997	
5	.842921	31	5	.847264	31	5	.851564	31	5	.855822	30	5	.86003	
6	.842983	37	6	.847326	37	6	.851625	37	6	.855882	36	6	.86009	
7	.843046	44	7	.847388	43	7	.851686	43	7	.855943	42	7	.86015	
8	.843108	50	8	.847449	50	8	.851747	49	8	.856003	48	8	.86021	
9	.843170	56	9	.847511	56	9	.851808	55	9	.856064	54	9	.86027	
6970	.843233	00	7040	.847573	00	7110	.851870	00	7180	.856124	00	7250	.86033	
1	.843295	06	1	.847634	06	1	.851931	06	1	.856185	06	1	.86039	
2	.843357	12	2	.847696	12	2	.851992	12	2	.856245	12	2	.86045	
3	.843420	19	3	.847758	18	3	.852053	18	3	.856306	18	3	.86051	
4	.843482	25	4	.847819	25	4	.852114	25	4	.856366	24	4	.86057	
5	.843544	31	5	.847881	31	5	.852175	31	5	.856427	30	5	.86063	
6	.843606	37	6	.847943	37	6	.852236	37	6	.856487	36	6	.86069	
7	.843669	43	7	.848004	43	7	.852297	43	7	.856548	42	7	.86075	
8	.843731	50	8	.848066	49	8	.852358	49	8	.856608	48	8	.86081	
9	.843793	56	9	.848127	55	9	.852419	55	9	.856668	54	9	.86087	
6980	.843855	00	7050	.848189	00	7120	.852480	00	7190	.856729	00	7260	.86093	
1	.843918	06	1	.848251	06	1	.852541	06	1	.856789	06	1	.86099	
2	.843980	12	2	.848312	12	2	.852602	12	2	.856850	12	2	.86105	
3	.844042	19	3	.848374	18	3	.852663	18	3	.856910	18	3	.86111	
4	.844104	25	4	.848435	25	4	.852724	24	4	.856970	24	4	.86117	
5	.844166	31	5	.848497	31	5	.852785	30	5	.857031	30	5	.86123	
6	.844229	37	6	.848559	37	6	.852846	37	6	.857091	36	6	.86129	
7	.844291	43	7	.848620	43	7	.852907	43	7	.857151	42	7	.86135	
8	.844353	50	8	.848682	49	8	.852968	49	8	.857212	48	8	.86141	
9	.844415	56	9	.848743	55	9	.853029	55	9	.857272	54	9	.86147	
6990	.844477	00	7060	.848805	00	7130	.853089	00	7200	.857332	00	7270	.86153	
1	.844539	06	1	.848866	06	1	.853150	06	1	.857393	06	1	.86159	
2	.844601	12	2	.848928	12	2	.853211	12	2	.857453	12	2	.86165	
3	.844663	19	3	.848989	18	3	.853272	18	3	.857513	18	3	.86171	
4	.844726	25	4	.849051	25	4	.853333	24	4	.857574	24	4	.86177	
5	.844788	31	5	.849112	31	5	.853394	30	5	.857634	30	5	.86183	
6	.844850	37	6	.849174	37	6	.853455	37	6	.857694	36	6	.86189	
7	.844912	43	7	.849235	43	7	.853516	43	7	.857754	42	7	.86195	
8	.844974	50	8	.849296	49	8	.853576	49	8	.857815	48	8	.86201	
9	.845036	56	9	.849358	55	9	.853637	55	9	.857875	54	9	.86207	
7000	.845098	00	7070	.849419	00	7140	.853698	00	7210	.857935	00	7280	.86213	
1	.845160	06	1	.849481	06	1	.853759	06	1	.857995	06	1	.86219	
2	.845222	12	2	.849542	12	2	.853820	12	2	.858056	12	2	.86225	
3	.845284	19	3	.849604	18	3	.853881	18	3	.858116	18	3	.86231	
4	.845346	25	4	.849665	25	4	.853941	24	4	.858176	24	4	.86237	
5	.845408	31	5	.849726	31	5	.854002	30	5	.858236	30	5	.86243	
6	.845470	37	6	.849788	37	6	.854063	37	6	.858296	36	6	.86249	
7	.845532	43	7	.849849	43	7	.854124	43	7	.858357	42	7	.86255	
8	.845594	50	8	.849911	49	8	.854184	49	8	.858417	48	8	.86261	
9	.845656	56	9	.849972	55	9	.854245	55	9	.858477	54	9	.86267	
7010	.845718	00	7080	.850033	00	7150	.854306	00	7220	.858537	00	7290	.86273	
1	.845780	06	1	.850095	06	1	.854367	06	1	.858597	06	1	.86279	
2	.845842	12	2	.850156	12	2	.854427	12	2	.858657	12	2	.86285	
3	.845904	19	3	.850217	18	3	.854488	18	3	.858718	18	3	.86291	
4	.845966	25	4	.850279	25	4	.854549	24	4	.858778	24	4	.86297	
5	.846028	31	5	.850340	31	5	.854610	30	5	.858838	30	5	.86303	
6	.846090	37	6	.850401	37	6	.854670	36	6	.858898	36	6	.86309	
7	.846151	43	7	.850462	43	7	.854731	42	7	.858958	42	7	.86315	
8	.846213	50	8	.850523	49	8	.854792	48	8	.859018	48	8	.86321	
9	.846275	56	9	.850585	55	9	.854852	54	9	.859078	54	9	.86327	

Log. .863323 to .883605

No. 7300 to 7649.

(u.)

Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
23 00	7370	.867467	00	7440	.871573	00	7510	.875640	00	7580	.879669	00
32 06	1	.867526	06	1	.871631	06	1	.875698	06	1	.879726	06
12 12	2	.867585	12	2	.871690	12	2	.875756	12	2	.879784	11
11 18	3	.867644	18	3	.871748	18	3	.875813	17	3	.879841	17
11 24	4	.867703	24	4	.871806	23	4	.875871	23	4	.879898	23
20 30	5	.867762	29	5	.871865	29	5	.875929	29	5	.879956	28
30 36	6	.867821	35	6	.871923	35	6	.875987	35	6	.880013	34
39 42	7	.867880	41	7	.871981	41	7	.876045	41	7	.880070	40
38 48	8	.867939	47	8	.872040	47	8	.876102	46	8	.880127	46
38 54	9	.867997	53	9	.872098	53	9	.876160	52	9	.880185	51
17 00	7380	.868056	00	7450	.872156	00	7520	.876218	00	7590	.880242	00
17 06	1	.868115	06	1	.872215	06	1	.876276	06	1	.880299	06
16 12	2	.868174	12	2	.872273	12	2	.876333	12	2	.880356	11
16 18	3	.868233	18	3	.872331	18	3	.876391	17	3	.880413	17
15 24	4	.868292	24	4	.872389	23	4	.876449	23	4	.880471	23
14 30	5	.868350	29	5	.872448	29	5	.876506	29	5	.880528	28
14 36	6	.868409	35	6	.872506	35	6	.876564	34	6	.880585	34
13 42	7	.868468	41	7	.872564	41	7	.876622	40	7	.880642	40
12 48	8	.868527	47	8	.872622	47	8	.876680	46	8	.880699	46
12 54	9	.868586	53	9	.872681	53	9	.876737	52	9	.880756	51
11 00	7390	.868644	00	7460	.872739	00	7530	.876795	00	7600	.880814	00
10 06	1	.868703	06	1	.872797	06	1	.876853	06	1	.880871	06
10 12	2	.868762	12	2	.872855	12	2	.876910	12	2	.880928	11
10 18	3	.868821	18	3	.872913	18	3	.876968	17	3	.880985	17
10 24	4	.868879	24	4	.872972	23	4	.877026	23	4	.881042	23
10 30	5	.868938	29	5	.873030	29	5	.877083	29	5	.881099	28
10 36	6	.868997	35	6	.873088	35	6	.877141	34	6	.881156	34
10 42	7	.869056	41	7	.873146	41	7	.877198	40	7	.881213	40
10 48	8	.869114	47	8	.873204	47	8	.877256	46	8	.881270	46
10 54	9	.869173	53	9	.873262	53	9	.877314	52	9	.881328	51
14 00	7400	.869232	00	7470	.873321	00	7540	.877371	00	7610	.881385	00
13 06	1	.869290	06	1	.873379	06	1	.877429	06	1	.881442	06
12 12	2	.869349	12	2	.873437	12	2	.877486	12	2	.881499	11
12 18	3	.869408	18	3	.873495	18	3	.877544	17	3	.881556	17
11 24	4	.869466	24	4	.873553	23	4	.877602	23	4	.881613	23
10 30	5	.869525	29	5	.873611	29	5	.877659	29	5	.881670	28
10 36	6	.869584	35	6	.873669	35	6	.877717	34	6	.881727	34
10 42	7	.869642	41	7	.873727	41	7	.877774	40	7	.881784	40
10 48	8	.869701	47	8	.873785	47	8	.877832	46	8	.881841	46
10 54	9	.869760	53	9	.873843	53	9	.877889	52	9	.881898	51
16 00	7410	.869818	00	7480	.873902	00	7550	.877947	00	7620	.881955	00
15 06	1	.869877	06	1	.873960	06	1	.878004	06	1	.882012	06
14 12	2	.869935	12	2	.874018	12	2	.878062	12	2	.882069	11
13 18	3	.869994	18	3	.874076	17	3	.878119	17	3	.882126	17
13 24	4	.870053	24	4	.874134	23	4	.878177	23	4	.882183	23
12 30	5	.870111	29	5	.874192	29	5	.878234	29	5	.882240	28
11 36	6	.870170	35	6	.874250	35	6	.878292	34	6	.882297	34
10 42	7	.870228	41	7	.874308	41	7	.878349	40	7	.882354	40
10 48	8	.870287	47	8	.874366	46	8	.878407	46	8	.882411	46
10 54	9	.870345	53	9	.874424	52	9	.878464	52	9	.882468	51
17 00	7420	.870404	00	7490	.874482	00	7560	.878522	00	7630	.882524	00
16 06	1	.870462	06	1	.874540	06	1	.878579	06	1	.882581	06
15 12	2	.870521	12	2	.874598	12	2	.878637	12	2	.882638	11
15 18	3	.870579	18	3	.874656	17	3	.878694	17	3	.882695	17
14 24	4	.870638	24	4	.874714	23	4	.878751	23	4	.882752	23
13 30	5	.870696	29	5	.874772	29	5	.878809	29	5	.882809	28
12 36	6	.870755	35	6	.874830	35	6	.878866	34	6	.882866	34
11 42	7	.870813	41	7	.874887	41	7	.878924	40	7	.882923	40
10 48	8	.870872	47	8	.874945	46	8	.878981	46	8	.882980	46
10 54	9	.870930	53	9	.875003	52	9	.879038	52	9	.883036	51
18 00	7430	.870989	00	7500	.875061	00	7570	.879096	00	7640	.883093	00
17 06	1	.871047	06	1	.875119	06	1	.879153	06	1	.883150	06
16 12	2	.871106	12	2	.875177	12	2	.879211	12	2	.883207	11
15 18	3	.871164	18	3	.875235	17	3	.879268	17	3	.883264	17
14 24	4	.871223	24	4	.875293	23	4	.879325	23	4	.883321	23
13 30	5	.871281	29	5	.875351	29	5	.879383	29	5	.883377	28
12 36	6	.871339	35	6	.875409	35	6	.879440	34	6	.883434	34
11 42	7	.871398	41	7	.875466	41	7	.879497	40	7	.883491	40
10 48	8	.871456	47	8	.875524	46	8	.879555	46	8	.883548	46
10 54	9	.871515	53	9	.875582	52	9	.879612	52	9	.883605	51

Log. .883661 to .903036

No. 7650 to 7999.

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
7650	.883661	00	7720	.887617	00	7790	.891537	00	7860	.895422	00	7930	.899308	00	8000	.903194	00
1	.883718	06	1	.887674	06	1	.891593	06	1	.895478	06	1	.899364	06	1	.903250	06
2	.883775	11	2	.887730	11	2	.891649	11	2	.895533	11	2	.899420	11	2	.903306	11
3	.883832	17	3	.887786	17	3	.891705	17	3	.895588	17	3	.899476	17	3	.903362	17
4	.883888	23	4	.887842	23	4	.891760	22	4	.895643	22	4	.899532	22	4	.903418	22
5	.883945	28	5	.887898	28	5	.891816	28	5	.895699	27	5	.899588	27	5	.903474	27
6	.884002	34	6	.887955	34	6	.891872	33	6	.895754	33	6	.899644	33	6	.903530	33
7	.884059	40	7	.888011	39	7	.891927	39	7	.895809	39	7	.899700	39	7	.903586	39
8	.884115	46	8	.888067	45	8	.891983	44	8	.895864	44	8	.899756	44	8	.903642	44
9	.884172	51	9	.888123	51	9	.892039	50	9	.895919	50	9	.899812	50	9	.903698	50
7660	.884229	00	7730	.888179	00	7800	.892095	00	7870	.895975	00	7940	.899868	00	8010	.903784	00
1	.884285	06	1	.888236	06	1	.892150	06	1	.896030	06	1	.899924	06	1	.903840	06
2	.884342	11	2	.888292	11	2	.892206	11	2	.896085	11	2	.899980	11	2	.903896	11
3	.884399	17	3	.888348	17	3	.892262	17	3	.896140	17	3	.900036	17	3	.903952	17
4	.884455	23	4	.888404	22	4	.892317	22	4	.896195	22	4	.900092	22	4	.904008	22
5	.884512	28	5	.888460	28	5	.892373	28	5	.896251	27	5	.900148	27	5	.904064	27
6	.884569	34	6	.888516	34	6	.892428	33	6	.896306	33	6	.900204	33	6	.904120	33
7	.884625	40	7	.888573	39	7	.892484	39	7	.896361	39	7	.900260	39	7	.904176	39
8	.884682	46	8	.888629	45	8	.892540	44	8	.896416	44	8	.900316	44	8	.904232	44
9	.884739	51	9	.888685	50	9	.892595	50	9	.896471	50	9	.900372	50	9	.904288	50
7670	.884795	00	7740	.888741	00	7810	.892651	00	7880	.896526	00	7950	.900428	00	8020	.904374	00
1	.884852	06	1	.888797	06	1	.892707	06	1	.896581	06	1	.900484	06	1	.904430	06
2	.884909	11	2	.888853	11	2	.892762	11	2	.896636	11	2	.900540	11	2	.904486	11
3	.884965	17	3	.888909	17	3	.892818	17	3	.896691	17	3	.900596	17	3	.904542	17
4	.885022	23	4	.888965	22	4	.892873	22	4	.896747	22	4	.900652	22	4	.904598	22
5	.885078	28	5	.889021	28	5	.892929	28	5	.896802	27	5	.900708	27	5	.904654	27
6	.885135	34	6	.889077	34	6	.892985	33	6	.896857	33	6	.900764	33	6	.904710	33
7	.885191	40	7	.889134	39	7	.893040	39	7	.896912	39	7	.900820	39	7	.904766	39
8	.885248	46	8	.889190	45	8	.893096	44	8	.896967	44	8	.900876	44	8	.904822	44
9	.885305	51	9	.889246	50	9	.893151	50	9	.897022	50	9	.900932	50	9	.904878	50
7680	.885361	00	7750	.889302	00	7820	.893207	00	7890	.897077	00	7960	.900988	00	8030	.904964	00
1	.885418	06	1	.889358	06	1	.893262	06	1	.897132	06	1	.901044	06	1	.905020	06
2	.885474	11	2	.889414	11	2	.893318	11	2	.897187	11	2	.901099	11	2	.905076	11
3	.885531	17	3	.889470	17	3	.893373	17	3	.897242	17	3	.901155	17	3	.905132	17
4	.885587	23	4	.889526	22	4	.893429	22	4	.897297	22	4	.901211	22	4	.905188	22
5	.885644	28	5	.889582	28	5	.893484	28	5	.897352	27	5	.901267	27	5	.905244	27
6	.885700	34	6	.889638	34	6	.893540	33	6	.897407	33	6	.901323	33	6	.905300	33
7	.885757	39	7	.889694	39	7	.893595	39	7	.897462	39	7	.901379	39	7	.905356	39
8	.885813	45	8	.889750	45	8	.893651	44	8	.897517	44	8	.901435	44	8	.905412	44
9	.885870	51	9	.889806	50	9	.893706	50	9	.897572	50	9	.901491	50	9	.905468	50
7690	.885926	00	7760	.889862	00	7830	.893762	00	7900	.897627	00	7970	.901547	00	8040	.905554	00
1	.885983	06	1	.889918	06	1	.893817	06	1	.897682	06	1	.901603	06	1	.905610	06
2	.886039	11	2	.889974	11	2	.893873	11	2	.897737	11	2	.901659	11	2	.905666	11
3	.886096	17	3	.890030	17	3	.893928	17	3	.897792	17	3	.901715	17	3	.905722	17
4	.886152	23	4	.890085	22	4	.893984	22	4	.897847	22	4	.901771	22	4	.905778	22
5	.886209	28	5	.890141	28	5	.894039	28	5	.897902	27	5	.901827	27	5	.905834	27
6	.886265	34	6	.890197	34	6	.894094	33	6	.897957	33	6	.901883	33	6	.905890	33
7	.886321	39	7	.890253	39	7	.894150	39	7	.898012	39	7	.901939	39	7	.905946	39
8	.886378	45	8	.890309	45	8	.894205	44	8	.898067	44	8	.901995	44	8	.906002	44
9	.886434	51	9	.890365	50	9	.894261	50	9	.898122	50	9	.902051	50	9	.906058	50
7700	.886491	00	7770	.890421	00	7840	.894316	00	7910	.898176	00	7980	.902107	00	8050	.906144	00
1	.886547	06	1	.890477	06	1	.894371	06	1	.898231	06	1	.902163	06	1	.906200	06
2	.886603	11	2	.890533	11	2	.894427	11	2	.898286	11	2	.902219	11	2	.906256	11
3	.886660	17	3	.890589	17	3	.894482	17	3	.898341	17	3	.902275	17	3	.906312	17
4	.886716	23	4	.890644	22	4	.894538	22	4	.898396	22	4	.902331	22	4	.906368	22
5	.886773	28	5	.890700	28	5	.894593	27	5	.898451	27	5	.902387	27	5	.906424	27
6	.886829	34	6	.890756	34	6	.894648	33	6	.898506	33	6	.902443	33	6	.906480	33
7	.886885	39	7	.890812	39	7	.894704	39	7	.898561	39	7	.902499	39	7	.906536	39
8	.886942	45	8	.890868	45	8	.894759	44	8	.898616	44	8	.902555	44	8	.906592	44
9	.886998	51	9	.890924	50	9	.894814	50	9	.898670	50	9	.902611	50	9	.906648	50
7710	.887054	00	7780	.890980	00	7850	.894870	00	7920	.898725	00	7990	.902667	00	8060	.906734	00
1	.887111	06	1	.891035	06	1	.894925	06	1	.898780	05	1	.902723	05	1	.906790	05
2	.887167	11	2	.891091	11	2	.894980	11	2	.898835	11	2	.902779	11	2	.906846	11
3	.887223	17	3	.891147	17	3	.895036	17	3	.898890	17	3	.902835	17	3	.906902	17
4	.887280	23	4	.891203	22	4	.895091	22	4	.898944	22	4	.902891	22	4	.906958	22
5	.887336	28	5	.891259	28	5	.895146	27	5	.898999	27	5	.902947	27	5	.907014	27
6	.887392	34	6	.891314	34	6	.895201	33	6	.899054	33	6	.903003	33	6	.907070	33
7	.887448	39	7	.891370	39	7	.895257	39	7	.899109	38	7	.903059	38	7	.907126	38
8	.887505	45	8	.891426	45	8	.895312	44	8	.899164	44	8	.903115	44	8	.907182	44
9	.887561	51	9	.891482	50	9	.895367	50	9	.899218	50	9	.903171	50	9	.907238	50

Log. .908090 to .921634

No. 8000 to 8349.

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Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
90	00	8070 .906873	00	8140 .910624	00	8210 .914343	00	8280 .918030	00			
44	05	1 .906927	05	1 .910678	05	1 .914396	05	1 .918083	05			
98	11	2 .906981	11	2 .910731	11	2 .914449	11	2 .918135	11			
53	16	3 .907035	16	3 .910784	16	3 .914502	16	3 .918188	16			
07	22	4 .907089	22	4 .910838	21	4 .914555	21	4 .918240	21			
61	27	5 .907142	27	5 .910891	27	5 .914608	27	5 .918292	26			
16	32	6 .907196	32	6 .910944	32	6 .914660	32	6 .918345	31			
70	38	7 .907250	38	7 .910998	37	7 .914713	37	7 .918397	37			
24	43	8 .907304	43	8 .911051	43	8 .914766	42	8 .918450	42			
78	49	9 .907358	49	9 .911104	48	9 .914819	48	9 .918502	47			
32	00	8080 .907411	00	8150 .911158	00	8220 .914872	00	8290 .918554	00			
87	05	1 .907465	05	1 .911211	05	1 .914925	05	1 .918607	05			
41	11	2 .907519	11	2 .911264	11	2 .914977	11	2 .918659	11			
95	16	3 .907573	16	3 .911317	16	3 .915030	16	3 .918712	16			
49	22	4 .907626	22	4 .911371	21	4 .915083	21	4 .918764	21			
03	27	5 .907680	27	5 .911424	27	5 .915136	27	5 .918816	26			
58	32	6 .907734	32	6 .911477	32	6 .915189	32	6 .918869	31			
12	38	7 .907787	38	7 .911530	37	7 .915241	37	7 .918921	37			
66	43	8 .907841	43	8 .911584	42	8 .915294	42	8 .918973	42			
20	49	9 .907895	49	9 .911637	48	9 .915347	48	9 .919026	47			
74	00	8090 .907948	00	8160 .911690	00	8230 .915400	00	8300 .919078	00			
28	05	1 .908002	05	1 .911743	05	1 .915453	05	1 .919130	05			
83	11	2 .908056	11	2 .911797	11	2 .915505	11	2 .919183	11			
37	16	3 .908109	16	3 .911850	16	3 .915558	16	3 .919235	16			
91	22	4 .908163	22	4 .911903	21	4 .915611	21	4 .919287	21			
45	27	5 .908217	27	5 .911956	27	5 .915664	27	5 .919340	26			
99	32	6 .908270	32	6 .912009	32	6 .915716	32	6 .919392	31			
53	38	7 .908324	38	7 .912063	37	7 .915769	37	7 .919444	37			
07	43	8 .908378	43	8 .912116	42	8 .915822	42	8 .919496	42			
61	49	9 .908431	49	9 .912169	48	9 .915874	48	9 .919549	47			
15	00	8100 .908485	00	8170 .912222	00	8240 .915927	00	8310 .919601	00			
70	05	1 .908539	05	1 .912275	05	1 .915980	05	1 .919653	05			
24	11	2 .908592	11	2 .912328	11	2 .916033	11	2 .919705	11			
78	16	3 .908646	16	3 .912381	16	3 .916085	16	3 .919758	16			
32	22	4 .908699	21	4 .912435	21	4 .916138	21	4 .919810	21			
86	27	5 .908753	27	5 .912488	27	5 .916191	27	5 .919862	26			
40	32	6 .908807	32	6 .912541	32	6 .916243	32	6 .919914	31			
94	38	7 .908860	37	7 .912594	37	7 .916296	37	7 .919967	37			
48	43	8 .908914	43	8 .912647	42	8 .916349	42	8 .920019	42			
02	49	9 .908967	48	9 .912700	48	9 .916401	48	9 .920071	47			
56	00	8110 .909021	00	8180 .912753	00	8250 .916454	00	8320 .920123	00			
10	05	1 .909074	05	1 .912806	05	1 .916507	05	1 .920175	05			
64	11	2 .909128	11	2 .912859	11	2 .916559	11	2 .920228	10			
18	16	3 .909181	16	3 .912913	16	3 .916612	16	3 .920280	16			
72	22	4 .909235	21	4 .912966	21	4 .916664	21	4 .920332	21			
26	27	5 .909288	27	5 .913019	27	5 .916717	26	5 .920384	26			
80	32	6 .909342	32	6 .913072	32	6 .916770	31	6 .920436	31			
34	38	7 .909395	37	7 .913125	37	7 .916822	37	7 .920489	36			
88	43	8 .909449	43	8 .913178	42	8 .916875	42	8 .920541	42			
42	49	9 .909502	48	9 .913231	48	9 .916927	47	9 .920593	47			
96	00	8120 .909556	00	8190 .913284	00	8260 .916980	00	8330 .920645	00			
50	05	1 .909609	05	1 .913337	05	1 .917033	05	1 .920697	05			
04	11	2 .909663	11	2 .913390	11	2 .917085	11	2 .920749	10			
58	16	3 .909716	16	3 .913443	16	3 .917138	16	3 .920801	16			
12	22	4 .909770	21	4 .913496	21	4 .917190	21	4 .920853	21			
65	27	5 .909823	27	5 .913549	27	5 .917243	26	5 .920906	26			
19	32	6 .909877	32	6 .913602	32	6 .917295	31	6 .920958	31			
73	38	7 .909930	37	7 .913655	37	7 .917348	37	7 .921010	36			
27	43	8 .909984	43	8 .913708	42	8 .917400	42	8 .921062	42			
81	49	9 .910037	48	9 .913761	48	9 .917453	47	9 .921114	47			
35	00	8130 .910090	00	8200 .913814	00	8270 .917505	00	8340 .921166	00			
89	05	1 .910144	05	1 .913867	05	1 .917558	05	1 .921218	05			
43	11	2 .910197	11	2 .913920	11	2 .917610	11	2 .921270	10			
97	16	3 .910251	16	3 .913973	16	3 .917663	16	3 .921322	16			
50	22	4 .910304	21	4 .914026	21	4 .917715	21	4 .921374	21			
04	27	5 .910358	27	5 .914079	27	5 .917768	26	5 .921426	26			
58	32	6 .910411	32	6 .914131	32	6 .917820	31	6 .921478	31			
12	38	7 .910464	37	7 .914184	37	7 .917873	37	7 .921530	36			
66	43	8 .910518	43	8 .914237	42	8 .917925	42	8 .921582	42			
20	49	9 .910571	48	9 .914290	48	9 .917978	47	9 .921634	47			

Log. .921686 to .939469

No. 8350 to 8699.

(u.)

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
8350	.921686	00	8420	.925312	00	8490	.928908	00	8560	.932474	00	8630	.936011	00
1	.921738	05	1	.925364	05	1	.928959	05	1	.932524	05	1	.936061	05
2	.921790	10	2	.925415	10	2	.929010	10	2	.932575	10	2	.936111	10
3	.921842	15	3	.925467	15	3	.929061	15	3	.932626	15	3	.936162	15
4	.921894	21	4	.925518	21	4	.929112	20	4	.932677	20	4	.936212	20
5	.921946	26	5	.925570	26	5	.929163	26	5	.932727	25	5	.936262	25
6	.921998	31	6	.925621	31	6	.929214	31	6	.932778	30	6	.936313	30
7	.922050	36	7	.925673	36	7	.929266	36	7	.932829	35	7	.936363	35
8	.922102	42	8	.925724	41	8	.929317	41	8	.932879	40	8	.936413	40
9	.922154	47	9	.925776	46	9	.929368	46	9	.932930	45	9	.936463	45
8360	.922206	00	8430	.925828	00	8500	.929419	00	8570	.932981	00	8640	.936514	00
1	.922258	05	1	.925879	05	1	.929470	05	1	.933031	05	1	.936564	05
2	.922310	10	2	.925931	10	2	.929521	10	2	.933082	10	2	.936614	10
3	.922362	16	3	.925982	15	3	.929572	15	3	.933133	15	3	.936664	15
4	.922414	21	4	.926034	21	4	.929623	20	4	.933183	20	4	.936715	20
5	.922466	26	5	.926085	26	5	.929674	26	5	.933234	25	5	.936765	25
6	.922518	31	6	.926137	31	6	.929725	31	6	.933285	30	6	.936815	30
7	.922570	36	7	.926188	36	7	.929776	36	7	.933335	35	7	.936865	35
8	.922622	42	8	.926239	41	8	.929827	41	8	.933386	40	8	.936916	40
9	.922674	47	9	.926291	46	9	.929878	46	9	.933437	45	9	.936966	45
8370	.922725	00	8440	.926342	00	8510	.929930	00	8580	.933487	00	8650	.937016	00
1	.922777	05	1	.926394	05	1	.929981	05	1	.933538	05	1	.937066	05
2	.922829	10	2	.926445	10	2	.930032	10	2	.933588	10	2	.937116	10
3	.922881	16	3	.926497	15	3	.930083	15	3	.933639	15	3	.937167	15
4	.922933	21	4	.926548	21	4	.930134	20	4	.933690	20	4	.937217	20
5	.922985	26	5	.926600	26	5	.930185	26	5	.933740	25	5	.937267	25
6	.923037	31	6	.926651	31	6	.930236	31	6	.933791	30	6	.937317	30
7	.923088	36	7	.926702	36	7	.930287	36	7	.933841	35	7	.937367	35
8	.923140	42	8	.926754	41	8	.930338	41	8	.933892	40	8	.937418	40
9	.923192	47	9	.926805	46	9	.930389	46	9	.933943	45	9	.937468	45
8380	.923244	00	8450	.926857	00	8520	.930440	00	8590	.933993	00	8660	.937518	00
1	.923296	05	1	.926908	05	1	.930491	05	1	.934044	05	1	.937568	05
2	.923348	10	2	.926959	10	2	.930541	10	2	.934094	10	2	.937618	10
3	.923399	16	3	.927011	15	3	.930592	15	3	.934145	15	3	.937668	15
4	.923451	21	4	.927062	21	4	.930643	20	4	.934195	20	4	.937718	20
5	.923503	26	5	.927114	26	5	.930694	25	5	.934246	25	5	.937769	25
6	.923555	31	6	.927165	31	6	.930745	31	6	.934296	30	6	.937819	30
7	.923607	36	7	.927216	36	7	.930796	36	7	.934347	35	7	.937869	35
8	.923658	42	8	.927268	41	8	.930847	41	8	.934397	40	8	.937919	40
9	.923710	47	9	.927319	46	9	.930898	46	9	.934448	45	9	.937969	45
8390	.923762	00	8460	.927370	00	8530	.930949	00	8600	.934498	00	8670	.938019	00
1	.923814	05	1	.927422	05	1	.931000	05	1	.934549	05	1	.938069	05
2	.923865	10	2	.927473	10	2	.931051	10	2	.934599	10	2	.938119	10
3	.923917	16	3	.927524	15	3	.931102	15	3	.934650	15	3	.938169	15
4	.923969	21	4	.927576	21	4	.931153	20	4	.934700	20	4	.938219	20
5	.924021	26	5	.927627	26	5	.931203	25	5	.934751	25	5	.938269	25
6	.924072	31	6	.927678	31	6	.931254	31	6	.934801	30	6	.938319	30
7	.924124	36	7	.927730	36	7	.931305	36	7	.934852	35	7	.938370	35
8	.924176	42	8	.927781	41	8	.931356	41	8	.934902	40	8	.938420	40
9	.924228	47	9	.927832	46	9	.931407	46	9	.934953	45	9	.938470	45
8400	.924279	00	8470	.927883	00	8540	.931458	00	8610	.935003	00	8680	.938520	00
1	.924331	05	1	.927935	05	1	.931509	05	1	.935054	05	1	.938570	05
2	.924383	10	2	.927986	10	2	.931560	10	2	.935104	10	2	.938620	10
3	.924434	15	3	.928037	15	3	.931610	15	3	.935154	15	3	.938670	15
4	.924486	21	4	.928088	21	4	.931661	20	4	.935205	20	4	.938720	20
5	.924538	26	5	.928140	26	5	.931712	25	5	.935255	25	5	.938770	25
6	.924589	31	6	.928191	31	6	.931763	31	6	.935306	30	6	.938820	30
7	.924641	36	7	.928242	36	7	.931814	36	7	.935356	35	7	.938870	35
8	.924693	41	8	.928293	41	8	.931864	41	8	.935406	40	8	.938920	40
9	.924744	46	9	.928345	46	9	.931915	46	9	.935457	45	9	.938970	45
8410	.924796	00	8480	.928396	00	8550	.931966	00	8620	.935507	00	8690	.939020	00
1	.924848	05	1	.928447	05	1	.932017	05	1	.935558	05	1	.939070	05
2	.924899	10	2	.928498	10	2	.932068	10	2	.935608	10	2	.939120	10
3	.924951	15	3	.928549	15	3	.932118	15	3	.935658	15	3	.939170	15
4	.925002	21	4	.928601	21	4	.932169	20	4	.935709	20	4	.939220	20
5	.925054	26	5	.928652	26	5	.932220	25	5	.935759	25	5	.939270	25
6	.925106	31	6	.928703	31	6	.932271	30	6	.935809	30	6	.939320	30
7	.925157	36	7	.928754	36	7	.932321	35	7	.935860	35	7	.939370	35
8	.925209	41	8	.928805	41	8	.932372	40	8	.935910	40	8	.939420	40
9	.925260	46	9	.928856	46	9	.932423	45	9	.935960	45	9	.939470	45

Log. .939519 to .956601

No. 8700 to 9049.

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Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
19 00	8770	.943000	00	8810	.946452	00	8910	.949878	00	8980	.953270	00
69 05	1	.943049	05	1	.946501	05	1	.949926	05	1	.953325	05
19 10	2	.943099	10	2	.946550	10	2	.949975	10	2	.953373	10
69 15	3	.943148	15	3	.946600	15	3	.950024	15	3	.953421	15
19 20	4	.943198	20	4	.946649	20	4	.950073	20	4	.953470	19
69 25	5	.943247	25	5	.946698	25	5	.950121	25	5	.953518	24
19 30	6	.943297	30	6	.946747	29	6	.950170	29	6	.953566	29
69 35	7	.943346	35	7	.946796	34	7	.950219	34	7	.953615	34
18 40	8	.943396	40	8	.946845	39	8	.950267	39	8	.953663	39
68 45	9	.943445	45	9	.946894	44	9	.950316	44	9	.953711	44
18 00	8780	.943494	00	8850	.946943	00	8920	.950365	00	8990	.953760	00
68 05	1	.943544	05	1	.946992	05	1	.950413	05	1	.953808	05
18 10	2	.943593	10	2	.947041	10	2	.950462	10	2	.953856	10
68 15	3	.943643	15	3	.947090	15	3	.950511	15	3	.953905	15
18 20	4	.943692	20	4	.947139	20	4	.950560	19	4	.953953	19
67 25	5	.943742	25	5	.947189	25	5	.950608	24	5	.954001	24
17 30	6	.943791	30	6	.947238	29	6	.950657	29	6	.954049	29
67 35	7	.943841	35	7	.947287	34	7	.950705	34	7	.954098	34
17 40	8	.943890	40	8	.947336	39	8	.950754	39	8	.954146	39
67 45	9	.943939	45	9	.947385	44	9	.950803	44	9	.954194	44
16 00	8790	.943989	00	8860	.947434	00	8930	.950851	00	9000	.954242	00
66 05	1	.944038	05	1	.947483	05	1	.950900	05	1	.954291	05
16 10	2	.944088	10	2	.947532	10	2	.950949	10	2	.954339	10
66 15	3	.944137	15	3	.947581	15	3	.950997	15	3	.954387	14
16 20	4	.944186	20	4	.947630	20	4	.951046	19	4	.954435	19
65 25	5	.944236	25	5	.947679	25	5	.951095	24	5	.954484	24
15 30	6	.944285	30	6	.947728	29	6	.951143	29	6	.954532	29
65 35	7	.944335	35	7	.947777	34	7	.951192	34	7	.954580	34
15 40	8	.944384	40	8	.947826	39	8	.951240	39	8	.954628	38
64 45	9	.944433	45	9	.947875	44	9	.951289	44	9	.954677	43
14 00	8800	.944483	00	8870	.947924	00	8940	.951337	00	9010	.954725	00
64 05	1	.944532	05	1	.947973	05	1	.951386	05	1	.954773	05
14 10	2	.944581	10	2	.948021	10	2	.951435	10	2	.954821	10
63 15	3	.944631	15	3	.948070	15	3	.951483	15	3	.954869	14
13 20	4	.944680	20	4	.948119	20	4	.951532	19	4	.954918	19
63 25	5	.944729	25	5	.948168	25	5	.951580	24	5	.954966	24
13 30	6	.944779	30	6	.948217	29	6	.951629	29	6	.955014	29
62 35	7	.944828	35	7	.948266	34	7	.951677	34	7	.955062	34
12 40	8	.944877	40	8	.948315	39	8	.951726	39	8	.955110	38
62 45	9	.944927	45	9	.948364	44	9	.951774	44	9	.955158	43
11 00	8810	.944976	00	8880	.948413	00	8950	.951823	00	9020	.955206	00
61 05	1	.945025	05	1	.948462	05	1	.951872	05	1	.955255	05
11 10	2	.945074	10	2	.948511	10	2	.951920	10	2	.955303	10
60 15	3	.945124	15	3	.948560	15	3	.951969	15	3	.955351	14
10 20	4	.945173	20	4	.948608	20	4	.952017	19	4	.955399	19
60 25	5	.945222	25	5	.948657	25	5	.952066	24	5	.955447	24
9 30	6	.945272	30	6	.948706	29	6	.952114	29	6	.955495	29
6 35	7	.945321	35	7	.948755	34	7	.952163	34	7	.955543	34
9 40	8	.945370	40	8	.948804	39	8	.952211	39	8	.955592	38
6 45	9	.945419	45	9	.948853	44	9	.952259	44	9	.955640	43
8 00	8820	.945469	00	8890	.948902	00	8960	.952308	00	9030	.955688	00
6 05	1	.945518	05	1	.948951	05	1	.952356	05	1	.955736	05
7 10	2	.945567	10	2	.948999	10	2	.952405	10	2	.955784	10
7 15	3	.945616	15	3	.949048	15	3	.952453	15	3	.955832	14
6 20	4	.945665	20	4	.949097	20	4	.952502	19	4	.955880	19
6 25	5	.945715	25	5	.949146	25	5	.952550	24	5	.955928	24
6 30	6	.945764	29	6	.949195	29	6	.952599	29	6	.955976	29
5 35	7	.945813	34	7	.949244	34	7	.952647	34	7	.956024	34
5 40	8	.945862	39	8	.949292	39	8	.952696	39	8	.956072	38
4 45	9	.945911	44	9	.949341	44	9	.952744	44	9	.956120	43
4 00	8830	.945961	00	8900	.949390	00	8970	.952792	00	9040	.956168	00
4 05	1	.946010	05	1	.949439	05	1	.952841	05	1	.956216	05
3 10	2	.946059	10	2	.949488	10	2	.952889	10	2	.956264	10
3 15	3	.946108	15	3	.949536	15	3	.952938	15	3	.956312	14
2 20	4	.946157	20	4	.949585	20	4	.952986	19	4	.956361	19
2 25	5	.946207	25	5	.949634	25	5	.953034	24	5	.956409	24
1 30	6	.946256	29	6	.949683	29	6	.953083	29	6	.956457	29
1 35	7	.946305	34	7	.949731	34	7	.953131	34	7	.956505	34
0 40	8	.946354	39	8	.949780	39	8	.953180	39	8	.956553	38
0 45	9	.946403	44	9	.949829	44	9	.953228	44	9	.956601	43

Log. .956649 to .973082

No. 9050 to 9399

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.
9050	.956649	00	9120	.959995	00	9190	.963315	00	9260	.966611	00	9330	.969981
1	.956697	05	1	.960042	05	1	.963363	05	1	.966658	05	1	.969991
2	.956744	10	2	.960090	10	2	.963410	09	2	.966705	09	2	.969997
3	.956792	14	3	.960138	14	3	.963457	14	3	.966752	14	3	.970002
4	.956840	19	4	.960185	19	4	.963504	19	4	.966798	19	4	.970006
5	.956888	24	5	.960233	24	5	.963552	24	5	.966845	24	5	.970011
6	.956936	29	6	.960280	28	6	.963599	28	6	.966892	28	6	.970016
7	.956984	34	7	.960328	33	7	.963646	33	7	.966939	33	7	.970020
8	.957032	38	8	.960376	38	8	.963693	38	8	.966986	38	8	.970025
9	.957080	43	9	.960423	43	9	.963741	42	9	.967033	42	9	.970030
9060	.957128	00	9130	.960471	00	9200	.963788	00	9270	.967080	00	9340	.970034
1	.957176	05	1	.960518	05	1	.963835	05	1	.967127	05	1	.970039
2	.957224	10	2	.960566	10	2	.963882	09	2	.967173	09	2	.970044
3	.957272	14	3	.960613	14	3	.963929	14	3	.967220	14	3	.970048
4	.957320	19	4	.960661	19	4	.963977	19	4	.967267	19	4	.970053
5	.957368	24	5	.960709	24	5	.964024	24	5	.967314	24	5	.970057
6	.957416	29	6	.960756	28	6	.964071	28	6	.967361	28	6	.970062
7	.957464	34	7	.960804	33	7	.964118	33	7	.967408	33	7	.970067
8	.957511	38	8	.960851	38	8	.964165	38	8	.967454	38	8	.970071
9	.957559	43	9	.960899	43	9	.964212	42	9	.967501	42	9	.970076
9070	.957607	00	9140	.960946	00	9210	.964260	00	9280	.967548	00	9350	.970081
1	.957655	05	1	.960994	05	1	.964307	05	1	.967595	05	1	.970085
2	.957703	10	2	.961041	10	2	.964354	09	2	.967642	09	2	.970090
3	.957751	14	3	.961089	14	3	.964401	14	3	.967688	14	3	.970095
4	.957799	19	4	.961136	19	4	.964448	19	4	.967735	19	4	.970099
5	.957847	24	5	.961184	24	5	.964495	24	5	.967782	23	5	.970104
6	.957894	29	6	.961231	28	6	.964542	28	6	.967829	28	6	.970109
7	.957942	34	7	.961279	33	7	.964590	33	7	.967875	33	7	.970113
8	.957990	38	8	.961326	38	8	.964637	38	8	.967922	38	8	.970118
9	.958038	43	9	.961374	43	9	.964684	42	9	.967969	42	9	.970122
9080	.958086	00	9150	.961421	00	9220	.964731	00	9290	.968016	00	9360	.970127
1	.958134	05	1	.961469	05	1	.964778	05	1	.968062	05	1	.970131
2	.958181	10	2	.961516	10	2	.964825	09	2	.968109	09	2	.970136
3	.958229	14	3	.961563	14	3	.964872	14	3	.968156	14	3	.970141
4	.958277	19	4	.961611	19	4	.964919	19	4	.968203	19	4	.970145
5	.958325	24	5	.961658	24	5	.964966	24	5	.968249	23	5	.970150
6	.958373	29	6	.961706	28	6	.965013	28	6	.968296	28	6	.970154
7	.958420	34	7	.961753	33	7	.965060	33	7	.968343	33	7	.970159
8	.958468	38	8	.961801	38	8	.965108	38	8	.968389	38	8	.970163
9	.958516	43	9	.961848	43	9	.965155	42	9	.968436	42	9	.970168
9090	.958564	00	9160	.961895	00	9230	.965202	00	9300	.968483	00	9370	.970173
1	.958612	05	1	.961943	05	1	.965249	05	1	.968530	05	1	.970177
2	.958659	10	2	.961990	10	2	.965296	09	2	.968576	09	2	.970182
3	.958707	14	3	.962038	14	3	.965343	14	3	.968623	14	3	.970186
4	.958755	19	4	.962085	19	4	.965390	19	4	.968670	19	4	.970191
5	.958803	24	5	.962132	24	5	.965437	24	5	.968716	23	5	.970195
6	.958850	29	6	.962180	28	6	.965484	28	6	.968763	28	6	.970200
7	.958898	34	7	.962227	33	7	.965531	33	7	.968810	33	7	.970204
8	.958946	38	8	.962275	38	8	.965578	38	8	.968856	37	8	.970209
9	.958994	43	9	.962322	43	9	.965625	42	9	.968903	42	9	.970213
9100	.959041	00	9170	.962369	00	9240	.965672	00	9310	.968950	00	9380	.970218
1	.959089	05	1	.962417	05	1	.965719	05	1	.968996	05	1	.970222
2	.959137	10	2	.962464	09	2	.965766	09	2	.969043	09	2	.970227
3	.959184	14	3	.962511	14	3	.965813	14	3	.969090	14	3	.970231
4	.959232	19	4	.962559	19	4	.965860	19	4	.969136	19	4	.970236
5	.959280	24	5	.962606	24	5	.965907	24	5	.969183	23	5	.970240
6	.959328	29	6	.962653	28	6	.965954	28	6	.969229	28	6	.970245
7	.959375	34	7	.962701	33	7	.966001	33	7	.969276	33	7	.970249
8	.959423	38	8	.962748	38	8	.966048	38	8	.969323	37	8	.970254
9	.959471	43	9	.962795	42	9	.966095	42	9	.969369	42	9	.970258
9110	.959518	00	9180	.962843	00	9250	.966142	00	9320	.969416	00	9390	.970263
1	.959566	05	1	.962890	05	1	.966189	05	1	.969462	05	1	.970267
2	.959614	10	2	.962937	09	2	.966236	09	2	.969509	09	2	.970272
3	.959661	14	3	.962985	14	3	.966283	14	3	.969556	14	3	.970276
4	.959709	19	4	.963032	19	4	.966329	19	4	.969602	19	4	.970281
5	.959757	24	5	.963079	24	5	.966376	24	5	.969649	23	5	.970285
6	.959804	29	6	.963126	28	6	.966423	28	6	.969695	28	6	.970290
7	.959852	34	7	.963174	33	7	.966470	33	7	.969742	33	7	.970294
8	.959900	38	8	.963221	38	8	.966517	38	8	.969788	37	8	.970299
9	.959947	43	9	.963268	42	9	.966564	42	9	.969835	42	9	.970303

Log. 973126 to .988960

No. 9400 to 9749

(u.)

pg.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
3128	00	9470	.976350	00	9540	.979548	00	9610	.982723	00	9680	.985875	00
3174	05	1	.976396	05	1	.979594	05	1	.982769	05	1	.985920	04
3220	09	2	.976442	09	2	.979639	09	2	.982814	09	2	.985965	09
3266	14	3	.976487	14	3	.979685	14	3	.982859	14	3	.986010	13
3313	18	4	.976533	18	4	.979730	18	4	.982904	18	4	.986055	18
3359	23	5	.976579	23	5	.979776	23	5	.982949	23	5	.986100	22
3405	28	6	.976625	28	6	.979821	27	6	.982994	27	6	.986144	27
3451	32	7	.976671	32	7	.979867	32	7	.983040	32	7	.986189	31
3497	37	8	.976717	37	8	.979912	36	8	.983085	36	8	.986234	36
3543	41	9	.976762	41	9	.979958	41	9	.983130	41	9	.986279	40
3590	00	9480	.976808	00	9550	.980003	00	9620	.983175	00	9690	.986324	00
3636	05	1	.976854	05	1	.980049	05	1	.983220	05	1	.986369	04
3682	09	2	.976900	09	2	.980094	09	2	.983265	09	2	.986413	09
3728	14	3	.976946	14	3	.980140	14	3	.983310	14	3	.986458	13
3774	18	4	.976991	18	4	.980185	18	4	.983356	18	4	.986503	18
3820	23	5	.977037	23	5	.980231	23	5	.983401	23	5	.986548	22
3866	28	6	.977083	27	6	.980276	27	6	.983446	27	6	.986593	27
3913	32	7	.977129	32	7	.980322	32	7	.983491	32	7	.986637	31
3959	37	8	.977175	37	8	.980367	36	8	.983536	36	8	.986682	36
4005	41	9	.977220	41	9	.980412	41	9	.983581	41	9	.986727	40
4051	00	9490	.977266	00	9560	.980458	00	9630	.983626	00	9700	.986772	00
4097	05	1	.977312	05	1	.980503	05	1	.983671	05	1	.986816	04
4143	09	2	.977358	09	2	.980549	09	2	.983716	09	2	.986861	09
4189	14	3	.977403	14	3	.980594	14	3	.983762	14	3	.986906	13
4235	18	4	.977449	18	4	.980640	18	4	.983807	18	4	.986951	18
4281	23	5	.977495	23	5	.980685	23	5	.983852	23	5	.986995	22
4327	28	6	.977541	27	6	.980730	27	6	.983897	27	6	.987040	27
4373	32	7	.977586	32	7	.980776	32	7	.983942	32	7	.987085	31
4420	37	8	.977632	37	8	.980821	36	8	.983987	36	8	.987130	36
4466	41	9	.977678	41	9	.980867	41	9	.984032	41	9	.987174	40
4512	00	9500	.977724	00	9570	.980912	00	9640	.984077	00	9710	.987219	00
4558	05	1	.977769	05	1	.980957	05	1	.984122	05	1	.987264	04
4604	09	2	.977815	09	2	.981003	09	2	.984167	09	2	.987309	09
4650	14	3	.977861	14	3	.981048	14	3	.984212	14	3	.987353	13
4696	18	4	.977906	18	4	.981093	18	4	.984257	18	4	.987398	18
4742	23	5	.977952	23	5	.981139	23	5	.984302	23	5	.987443	22
4788	28	6	.977998	27	6	.981184	27	6	.984347	27	6	.987487	27
4834	32	7	.978043	32	7	.981229	32	7	.984392	32	7	.987532	31
4880	37	8	.978089	37	8	.981275	36	8	.984437	36	8	.987577	36
4926	41	9	.978135	41	9	.981320	41	9	.984482	41	9	.987622	40
4972	00	9510	.978180	00	9580	.981365	00	9650	.984527	00	9720	.987666	00
5018	05	1	.978226	05	1	.981411	05	1	.984572	05	1	.987711	04
5064	09	2	.978272	09	2	.981456	09	2	.984617	09	2	.987756	09
5110	14	3	.978317	14	3	.981501	14	3	.984662	14	3	.987800	13
5156	18	4	.978363	18	4	.981547	18	4	.984707	18	4	.987845	18
5202	23	5	.978409	23	5	.981592	23	5	.984752	23	5	.987890	22
5248	28	6	.978454	27	6	.981637	27	6	.984797	27	6	.987934	27
5294	32	7	.978500	32	7	.981683	32	7	.984842	32	7	.987979	31
5340	37	8	.978546	37	8	.981728	36	8	.984887	36	8	.988024	36
5386	41	9	.978591	41	9	.981773	41	9	.984932	41	9	.988068	40
5432	00	9520	.978637	00	9590	.981819	00	9660	.984977	00	9730	.988113	00
5478	05	1	.978683	05	1	.981864	05	1	.985022	05	1	.988157	04
5524	09	2	.978728	09	2	.981909	09	2	.985067	09	2	.988202	09
5570	14	3	.978774	14	3	.981954	14	3	.985112	14	3	.988247	13
5616	18	4	.978819	18	4	.982000	18	4	.985157	18	4	.988291	18
5661	23	5	.978865	23	5	.982045	23	5	.985202	23	5	.988336	22
5707	28	6	.978911	27	6	.982090	27	6	.985247	27	6	.988381	27
5753	32	7	.978956	32	7	.982135	32	7	.985292	32	7	.988425	31
5799	37	8	.979002	36	8	.982181	36	8	.985337	36	8	.988470	36
5845	41	9	.979047	41	9	.982226	41	9	.985382	41	9	.988514	40
5891	00	9530	.979093	00	9600	.982271	00	9670	.985426	00	9740	.988559	00
5937	05	1	.979138	05	1	.982316	05	1	.985471	04	1	.988603	04
5983	09	2	.979184	09	2	.982362	09	2	.985516	09	2	.988648	09
6029	14	3	.979230	14	3	.982407	14	3	.985561	13	3	.988693	13
6075	18	4	.979275	18	4	.982452	18	4	.985606	18	4	.988737	18
6121	23	5	.979321	23	5	.982497	23	5	.985651	22	5	.988782	22
6166	28	6	.979366	27	6	.982543	27	6	.985696	27	6	.988826	27
6212	32	7	.979412	32	7	.982588	32	7	.985741	31	7	.988871	31
6258	37	8	.979457	36	8	.982633	36	8	.985786	36	8	.988915	36
6304	41	9	.979503	41	9	.982678	41	9	.985830	40	9	.988960	40

Log. .989005 to .999957

No. 9750 to 9999.

(u.)

No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.	No.	Log.	Part.
9750	.989005	00	9800	.991226	00	9850	.993436	00	9900	.995635	00	9950	.997823	00
1	.989049	04	1	.991270	04	1	.993480	04	1	.995679	04	1	.997867	04
2	.989094	09	2	.991315	09	2	.993524	09	2	.995723	09	2	.997910	09
3	.989138	13	3	.991359	13	3	.993568	13	3	.995767	13	3	.997954	13
4	.989183	18	4	.991403	18	4	.993613	18	4	.995811	18	4	.997998	18
5	.989227	22	5	.991448	22	5	.993657	22	5	.995854	22	5	.998041	22
6	.989272	27	6	.991492	27	6	.993701	26	6	.995898	26	6	.998085	26
7	.989316	31	7	.991536	31	7	.993745	31	7	.995942	31	7	.998128	30
8	.989361	36	8	.991580	36	8	.993789	35	8	.995986	35	8	.998172	35
9	.989405	40	9	.991625	40	9	.993833	40	9	.996030	40	9	.998216	30
9760	.989450	00	9810	.991669	00	9860	.993877	00	9910	.996074	00	9960	.998259	00
1	.989494	04	1	.991713	04	1	.993921	04	1	.996117	04	1	.998303	04
2	.989539	09	2	.991757	09	2	.993965	09	2	.996161	09	2	.998346	09
3	.989583	13	3	.991802	13	3	.994009	13	3	.996205	13	3	.998390	13
4	.989628	18	4	.991846	18	4	.994053	18	4	.996249	18	4	.998434	17
5	.989672	22	5	.991890	22	5	.994097	22	5	.996293	22	5	.998477	22
6	.989717	27	6	.991934	27	6	.994141	26	6	.996336	26	6	.998521	26
7	.989761	31	7	.991979	31	7	.994185	31	7	.996380	31	7	.998564	30
8	.989806	36	8	.992023	36	8	.994229	35	8	.996424	35	8	.998608	35
9	.989850	40	9	.992067	40	9	.994273	40	9	.996468	40	9	.998652	39
9770	.989895	00	9820	.992111	00	9870	.994317	00	9920	.996512	00	9970	.998695	00
1	.989939	04	1	.992156	04	1	.994361	04	1	.996555	04	1	.998739	04
2	.989983	09	2	.992200	09	2	.994405	09	2	.996599	09	2	.998782	09
3	.990028	13	3	.992244	13	3	.994449	13	3	.996643	13	3	.998826	13
4	.990072	18	4	.992288	18	4	.994493	18	4	.996687	18	4	.998869	17
5	.990117	22	5	.992333	22	5	.994537	22	5	.996730	22	5	.998913	22
6	.990161	27	6	.992377	26	6	.994581	26	6	.996774	26	6	.998956	26
7	.990206	31	7	.992421	31	7	.994625	31	7	.996818	31	7	.999000	30
8	.990250	36	8	.992465	35	8	.994669	35	8	.996862	35	8	.999043	35
9	.990294	40	9	.992509	40	9	.994713	40	9	.996905	40	9	.999087	39
9780	.990339	00	9830	.992553	00	9880	.994757	00	9930	.996949	00	9980	.999130	00
1	.990383	04	1	.992598	04	1	.994801	04	1	.996993	04	1	.999174	04
2	.990428	09	2	.992642	09	2	.994845	09	2	.997037	09	2	.999218	09
3	.990472	13	3	.992686	13	3	.994889	13	3	.997080	13	3	.999261	13
4	.990516	18	4	.992730	18	4	.994933	18	4	.997124	18	4	.999305	17
5	.990561	22	5	.992774	22	5	.994977	22	5	.997168	22	5	.999348	22
6	.990605	27	6	.992818	26	6	.995021	26	6	.997212	26	6	.999392	26
7	.990650	31	7	.992863	31	7	.995064	31	7	.997255	31	7	.999435	30
8	.990694	36	8	.992907	35	8	.995108	35	8	.997299	35	8	.999478	35
9	.990738	40	9	.992951	40	9	.995152	40	9	.997343	39	9	.999522	39
9790	.990783	00	9840	.992995	00	9890	.995196	00	9940	.997386	00	9990	.999565	00
1	.990827	04	1	.993039	04	1	.995240	04	1	.997430	04	1	.999609	04
2	.990871	09	2	.993083	09	2	.995284	09	2	.997474	09	2	.999653	09
3	.990916	13	3	.993127	13	3	.995328	13	3	.997517	13	3	.999696	13
4	.990960	18	4	.993172	18	4	.995372	18	4	.997561	17	4	.999739	17
5	.991004	22	5	.993216	22	5	.995416	22	5	.997605	22	5	.999783	22
6	.991049	27	6	.993260	26	6	.995460	26	6	.997648	26	6	.999826	26
7	.991093	31	7	.993304	31	7	.995504	31	7	.997692	30	7	.999870	30
8	.991137	36	8	.993348	35	8	.995547	35	8	.997736	35	8	.999913	35
9	.991182	40	9	.993392	40	9	.995591	40	9	.997779	39	9	.999957	39

(u. 2) Table for converting Minutes and Seconds into Seconds.

m or s	0'	1'	2'	3'	4'	5'	6'	7'	8'	9'
0	0	60	120	180	240	300	360	420	480	540
10	600	660	720	780	840	900	960	1020	1080	1140
20	1200	1260	1320	1380	1440	1500	1560	1620	1680	1740
30	1800	1860	1920	1980	2040	2100	2160	2220	2280	2340
40	2400	2460	2520	2580	2640	2700	2760	2820	2880	2940
50	3000	3060	3120	3180	3240	3300	3360	3420	3480	3540

1° or 1^h = 3600"2° or 2^h = 7200"3° or 3^h = 10800"4° or 4^h = 14400"5° or 5^h = 18000"6° or 6^h = 21600"

Natural Versines to Seconds of Time.

0 ^m	1 ^m	2 ^m	3 ^m	4 ^m	5 ^m	6 ^m	7 ^m	8 ^m	9 ^m	10 ^m	11 ^m	sec.
0	10	39	86	152	238	343	466	609	771	952	1152	0
0	10	39	87	153	240	345	469	612	774	955	1155	1
0	10	39	88	155	241	346	471	614	777	958	1159	2
0	10	40	89	156	243	348	473	617	780	961	1162	3
0	11	41	90	157	244	350	475	619	782	964	1166	4
0	11	41	91	159	246	352	478	622	785	968	1169	5
0	12	42	92	160	248	354	480	624	788	971	1173	6
0	12	43	93	161	249	356	482	627	791	974	1176	7
0	12	43	93	163	251	358	484	630	794	977	1180	8
0	13	44	94	164	253	360	487	632	797	981	1183	9
0	13	45	95	165	254	362	489	635	800	984	1187	10
0	13	45	96	167	256	364	491	637	803	987	1190	11
0	14	46	97	168	257	366	493	640	806	990	1194	12
0	14	47	98	169	259	368	496	643	809	993	1197	13
1	14	47	99	171	261	370	498	645	811	997	1201	14
1	15	48	100	172	262	372	500	648	814	1000	1205	15
1	15	49	102	173	264	374	503	650	817	1003	1208	16
1	16	50	103	175	266	376	505	653	820	1006	1212	17
1	16	50	104	176	267	378	507	656	823	1010	1215	18
1	17	51	105	177	269	380	510	658	826	1013	1219	19
1	17	52	106	179	271	382	512	661	829	1016	1222	20
1	17	53	107	180	272	384	514	664	832	1020	1226	21
1	18	53	108	182	274	386	517	666	835	1023	1230	22
1	18	54	109	183	276	388	519	669	838	1026	1233	23
2	19	55	110	184	278	390	521	672	841	1029	1237	24
2	19	56	111	185	279	392	524	674	844	1033	1241	25
2	20	56	112	187	281	394	526	677	847	1036	1244	26
2	20	57	113	188	283	396	528	680	850	1039	1248	27
2	20	58	114	190	284	398	531	682	853	1043	1251	28
2	21	59	116	191	286	400	533	685	856	1046	1255	29
3	21	59	117	193	288	402	535	688	859	1049	1259	30
3	22	60	118	194	289	404	538	690	862	1053	1262	31
3	22	61	119	196	291	406	540	693	865	1056	1266	32
3	23	62	120	197	293	408	543	696	868	1059	1270	33
3	23	63	121	198	295	410	545	699	871	1062	1273	34
3	24	64	122	200	297	412	547	701	874	1066	1277	35
3	24	64	123	201	299	415	550	704	877	1069	1281	36
4	25	65	124	203	300	417	552	707	880	1073	1284	37
4	25	66	126	204	302	419	555	709	883	1076	1288	38
4	26	67	127	206	304	421	557	712	886	1079	1292	39
4	26	68	128	207	306	423	559	715	889	1083	1295	40
4	27	68	129	209	307	425	562	718	892	1086	1299	41
5	28	69	130	210	309	427	564	720	896	1090	1303	42
5	28	70	131	212	311	429	567	723	899	1093	1307	43
5	29	71	133	213	313	432	569	726	902	1096	1310	44
5	29	72	134	215	315	434	572	729	905	1100	1314	45
6	30	73	135	216	316	436	574	732	908	1103	1318	46
6	30	74	136	218	318	438	577	734	911	1107	1321	47
6	31	75	137	219	320	440	579	737	914	1110	1325	48
6	31	75	139	221	322	442	582	740	917	1114	1329	49
7	32	76	140	222	324	444	584	743	920	1117	1333	50
7	33	77	141	225	326	447	587	745	923	1120	1336	51
7	33	78	142	226	328	449	589	748	927	1124	1340	52
7	34	79	144	227	329	451	592	751	930	1127	1344	53
8	34	80	145	229	331	453	594	754	933	1131	1348	54
8	35	81	146	230	333	455	597	757	936	1134	1352	55
8	36	82	147	232	335	458	599	760	939	1138	1355	56
8	36	83	149	233	337	460	602	763	942	1141	1359	57
8	37	84	150	235	339	462	604	765	945	1145	1363	58
9	37	85	151	236	341	464	607	768	949	1148	1367	59
10	38	86	152	238	343	466	609	771	952	1152	1370	60

Natural Versines to Seconds of Time

(v.)

sec.	12 ^m	13 ^m	14 ^m	15 ^m	16 ^m	17 ^m	18 ^m	19 ^m	20 ^m	21 ^m	22 ^m	23 ^m	sec.
0	1370	1608	1865	2141	2436	2750	3083	3434	3805	4195	4604	5031	0
1	1374	1612	1870	2146	2441	2755	3088	3441	3812	4202	4611	5039	1
2	1378	1617	1874	2151	2446	2761	3093	3447	3818	4208	4618	5046	2
3	1382	1621	1879	2155	2451	2766	3099	3453	3824	4215	4625	5053	3
4	1386	1625	1883	2160	2456	2771	3106	3459	3831	4222	4632	5061	4
5	1390	1629	1887	2165	2461	2777	3111	3465	3837	4228	4639	5068	5
6	1393	1633	1892	2170	2466	2782	3117	3471	3843	4235	4646	5075	6
7	1397	1637	1896	2175	2472	2788	3123	3477	3850	4242	4653	5083	7
8	1401	1641	1901	2179	2477	2793	3128	3483	3856	4248	4660	5090	8
9	1405	1646	1905	2184	2482	2799	3134	3489	3863	4255	4667	5097	9
10	1409	1650	1910	2189	2487	2804	3140	3495	3869	4262	4674	5105	10
11	1413	1654	1914	2194	2492	2809	3146	3501	3875	4269	4681	5112	11
12	1416	1658	1919	2198	2497	2815	3151	3507	3882	4275	4688	5119	12
13	1420	1662	1923	2203	2502	2820	3157	3513	3888	4282	4695	5127	13
14	1424	1667	1928	2208	2507	2826	3163	3519	3895	4289	4702	5134	14
15	1428	1671	1932	2213	2513	2831	3169	3525	3901	4295	4709	5141	15
16	1432	1675	1937	2218	2518	2837	3175	3531	3907	4302	4716	5149	16
17	1436	1679	1941	2223	2523	2842	3180	3538	3914	4309	4723	5156	17
18	1440	1683	1946	2227	2528	2848	3186	3544	3920	4316	4730	5163	18
19	1444	1688	1950	2232	2533	2853	3192	3550	3927	4322	4737	5171	19
20	1448	1692	1955	2237	2538	2859	3198	3556	3933	4329	4744	5178	20
21	1451	1696	1960	2242	2544	2864	3204	3562	3940	4336	4751	5186	21
22	1455	1700	1964	2247	2549	2870	3209	3568	3946	4343	4758	5193	22
23	1459	1705	1968	2252	2554	2875	3215	3574	3952	4350	4766	5200	23
24	1463	1709	1973	2257	2559	2881	3221	3581	3959	4356	4773	5208	24
25	1467	1713	1978	2262	2564	2886	3227	3587	3965	4363	4780	5215	25
26	1471	1717	1982	2266	2570	2892	3233	3593	3972	4370	4787	5223	26
27	1475	1722	1987	2272	2575	2897	3239	3599	3978	4377	4794	5230	27
28	1479	1726	1992	2276	2580	2903	3244	3605	3985	4383	4801	5237	28
29	1483	1730	1997	2281	2585	2908	3250	3611	3991	4390	4808	5245	29
30	1487	1734	2001	2286	2590	2914	3256	3618	3998	4397	4815	5252	30
31	1491	1739	2005	2291	2596	2919	3262	3624	4004	4404	4822	5260	31
32	1495	1743	2010	2296	2601	2925	3268	3630	4011	4411	4829	5267	32
33	1499	1747	2014	2301	2606	2930	3274	3636	4017	4418	4837	5275	33
34	1503	1751	2019	2306	2611	2936	3280	3642	4024	4424	4844	5282	34
35	1507	1756	2024	2311	2617	2942	3286	3648	4030	4431	4851	5290	35
36	1511	1760	2028	2316	2622	2947	3291	3655	4037	4438	4858	5297	36
37	1515	1764	2033	2321	2627	2952	3297	3661	4043	4445	4865	5305	37
38	1519	1769	2038	2326	2632	2958	3303	3667	4050	4452	4872	5312	38
39	1523	1773	2042	2331	2638	2964	3309	3673	4056	4459	4880	5320	39
40	1527	1777	2047	2335	2643	2970	3315	3680	4063	4465	4887	5327	40
41	1531	1782	2052	2340	2648	2975	3321	3686	4070	4472	4894	5335	41
42	1535	1786	2056	2345	2654	2981	3327	3692	4076	4479	4901	5342	42
43	1539	1790	2061	2350	2659	2986	3333	3698	4083	4486	4908	5350	43
44	1543	1795	2066	2355	2664	2992	3339	3705	4089	4493	4916	5357	44
45	1547	1799	2070	2360	2669	2998	3345	3711	4096	4500	4923	5365	45
46	1551	1804	2075	2365	2675	3003	3351	3717	4102	4507	4930	5372	46
47	1555	1808	2080	2370	2680	3009	3357	3723	4109	4514	4937	5380	47
48	1559	1812	2084	2375	2685	3015	3363	3730	4116	4520	4944	5387	48
49	1563	1817	2089	2380	2691	3020	3369	3736	4122	4527	4952	5395	49
50	1567	1821	2094	2385	2696	3026	3375	3742	4129	4534	4959	5402	50
51	1571	1825	2099	2390	2701	3031	3380	3749	4135	4541	4966	5410	51
52	1575	1830	2103	2395	2707	3037	3386	3755	4142	4548	4973	5417	52
53	1580	1834	2108	2401	2712	3043	3392	3761	4149	4555	4981	5425	53
54	1584	1839	2113	2406	2718	3049	3398	3767	4155	4562	4988	5433	54
55	1588	1843	2117	2411	2723	3054	3404	3774	4162	4569	4995	5440	55
56	1592	1847	2122	2416	2728	3060	3410	3780	4168	4576	5002	5448	56
57	1596	1852	2127	2421	2734	3066	3416	3786	4175	4583	5010	5455	57
58	1600	1856	2132	2426	2739	3071	3422	3793	4182	4590	5017	5463	58
59	1604	1861	2136	2431	2744	3077	3428	3799	4188	4597	5024	5470	59
60	1608	1865	2141	2436	2750	3083	3434	3805	4195	4604	5031	5478	60

Natural Versines to Seconds of Time.

(v.)

24 ^m	25 ^m	26 ^m	27 ^m	28 ^m	29 ^m	30 ^m	31 ^m	32 ^m	33 ^m	34 ^m	35 ^m	sec.
5478	5944	6428	6931	7454	7995	8555	9134	9732	10349	10984	11638	0
5486	5952	6436	6940	7463	8004	8564	9144	9742	10359	10995	11649	1
5494	5960	6445	6949	7472	8013	8574	9154	9752	10369	11006	11661	2
5501	5967	6453	6957	7481	8023	8583	9164	9762	10379	11016	11672	3
5509	5975	6461	6966	7489	8032	8593	9173	9772	10390	11027	11683	4
5516	5983	6469	6974	7498	8041	8602	9183	9782	10400	11038	11694	5
5524	5991	6478	6983	7507	8050	8612	9193	9793	10411	11049	11705	6
5531	5999	6486	6991	7516	8059	8621	9203	9803	10421	11059	11716	7
5539	6007	6494	7000	7525	8069	8631	9213	9813	10432	11070	11727	8
5547	6015	6502	7009	7534	8078	8641	9223	9823	10442	11081	11738	9
5554	6023	6511	7017	7543	8087	8650	9232	9833	10453	11092	11749	10
5562	6031	6519	7026	7552	8096	8659	9242	9843	10463	11102	11760	11
5570	6039	6527	7034	7561	8106	8669	9252	9854	10474	11114	11772	12
5577	6047	6536	7043	7570	8115	8679	9262	9864	10484	11124	11783	13
5585	6055	6544	7052	7579	8124	8689	9272	9874	10495	11135	11794	14
5593	6063	6551	7060	7587	8133	8698	9282	9884	10495	11146	11805	15
5600	6071	6560	7069	7596	8143	8708	9292	9895	10516	11157	11816	16
5608	6079	6569	7078	7605	8152	8717	9301	9905	10526	11167	11827	17
5616	6087	6577	7086	7614	8161	8727	9311	9915	10537	11178	11838	18
5623	6095	6585	7095	7623	8170	8736	9321	9925	10547	11189	11849	19
5631	6103	6594	7103	7632	8180	8746	9331	9935	10558	11200	11861	20
5639	6111	6602	7112	7641	8189	8755	9341	9945	10568	11211	11872	21
5647	6119	6610	7121	7650	8198	8765	9351	9956	10579	11222	11883	22
5654	6127	6619	7130	7659	8207	8774	9361	9966	10596	11233	11894	23
5662	6135	6627	7138	7668	8217	8784	9371	9976	10601	11244	11906	24
5670	6143	6636	7147	7677	8226	8794	9381	9986	10611	11254	11917	25
5678	6151	6644	7156	7686	8235	8804	9391	9997	10622	11265	11928	26
5685	6159	6652	7164	7695	8245	8813	9401	10007	10632	11276	11939	27
5693	6167	6661	7173	7704	8254	8823	9411	10017	10643	11287	11950	28
5691	6175	6669	7182	7713	8263	8832	9421	10027	10653	11298	11961	29
5699	6183	6678	7190	7722	8273	8842	9431	10038	10664	11309	11973	30
5706	6192	6686	7199	7731	8282	8852	9441	10048	10674	11320	11984	31
5714	6200	6694	7208	7740	8291	8862	9451	10058	10685	11331	11995	32
5722	6208	6703	7217	7749	8301	8872	9461	10068	10695	11342	12006	33
5730	6216	6711	7226	7758	8310	8881	9471	10079	10706	11353	12018	34
5738	6224	6719	7234	7767	8319	8891	9481	10089	10716	11364	12029	35
5746	6232	6728	7243	7776	8329	8900	9491	10100	10728	11374	12040	36
5754	6240	6736	7251	7785	8338	8910	9501	10110	10738	11385	12051	37
5762	6248	6745	7260	7794	8348	8920	9511	10120	10749	11396	12063	38
5770	6256	6753	7269	7804	8357	8930	9521	10130	10759	11407	12074	39
5778	6264	6762	7278	7813	8366	8939	9531	10141	10770	11418	12085	40
5786	6273	6770	7286	7822	8376	8949	9541	10151	10781	11429	12096	41
5794	6281	6778	7295	7831	8385	8958	9551	10162	10792	11440	12108	42
5802	6289	6787	7304	7840	8394	8968	9561	10172	10802	11452	12119	43
5810	6297	6795	7313	7849	8404	8978	9571	10182	10813	11462	12130	44
5818	6305	6804	7321	7858	8413	8988	9581	10192	10823	11473	12141	45
5826	6313	6812	7330	7867	8423	8997	9591	10203	10834	11484	12153	46
5834	6322	6821	7339	7876	8432	9007	9601	10213	10844	11495	12164	47
5842	6330	6829	7348	7885	8442	9017	9611	10224	10855	11506	12176	48
5850	6338	6838	7357	7894	8451	9027	9621	10234	10865	11517	12187	49
5858	6346	6846	7365	7903	8460	9036	9631	10245	10877	11528	12198	50
5866	6354	6855	7374	7913	8470	9046	9641	10255	10887	11539	12209	51
5874	6362	6863	7383	7922	8479	9056	9651	10265	10898	11550	12221	52
5882	6371	6872	7392	7931	8489	9066	9661	10275	10909	11561	12232	53
5890	6379	6880	7401	7940	8498	9075	9671	10286	10920	11572	12243	54
5898	6387	6889	7410	7949	8508	9085	9681	10296	10930	11583	12254	55
5906	6395	6897	7418	7958	8517	9095	9691	10307	10941	11594	12266	56
5914	6403	6906	7427	7968	8527	9105	9701	10317	10952	11605	12277	57
5922	6411	6914	7436	7977	8536	9114	9712	10328	10963	11616	12289	58
5930	6420	6923	7445	7986	8546	9124	9722	10338	10973	11627	12300	59
5938	6428	6931	7454	7995	8555	9134	9732	10349	10984	11638	12312	60

Nat. Versines.

	0°	1°	2°	3°	4°	5°	6°	7°	8°
0	0000000	0000152	0000609	0001370	0002436	0003805	0005478	0007454	0009732
1	0000000	0000157	0000619	0001386	0002456	0003831	0005509	0007489	0009772
2	000000	00163	00630	01401	02477	03856	05539	07525	09813
3	00000	00168	00640	01416	02497	03882	05570	07561	09854
4	0000001	0000173	0000650	0001432	0002518	0003907	0005600	0007596	0009894
5	00001	00179	00661	01448	02538	03933	05631	07632	09935
6	00001	00184	00672	01463	02559	03959	05662	07668	09976
7	0000002	0000190	0000682	0001479	0002580	0003985	0005693	0007704	0010017
8	00003	00196	00693	01495	02601	04011	05724	07740	10058
9	00003	00201	00704	01511	02622	04037	05755	07776	10100
10	0000004	0000207	0000715	0001527	0002643	0004063	0005786	0007813	0010141
11	00005	00213	00726	01543	02664	04089	05818	07849	10182
12	00006	00219	00737	01559	02685	04116	05849	07885	10224
13	0000007	0000226	0000748	0001575	0002707	0004142	0005880	0007922	0010265
14	00008	00232	00760	01592	02728	04168	05912	07958	10307
15	00009	00238	00771	01608	02750	04195	05944	07995	10349
16	0000011	0000244	0000782	0001625	0002771	0004222	0005975	0008032	0010390
17	00012	00251	00794	01641	02793	04248	06007	08069	10432
18	00014	00257	00806	01658	02815	04275	06039	08106	10474
19	0000015	0000264	0000817	0001675	0002837	0004302	0006071	0008143	0010516
20	00017	00271	00829	01692	02859	04329	06103	08180	10558
21	00019	00278	00841	01709	02881	04356	06135	08217	10601
22	0000020	0000284	0000853	0001726	0002903	0004383	0006167	0008254	0010643
23	00022	00291	00865	01743	02925	04411	06200	08291	10685
24	00024	00299	00877	01760	02947	04438	06232	08329	10728
25	0000026	0000306	0000889	0001777	0002970	0004465	0006264	0008366	0010770
26	00029	00313	00902	01795	02992	04493	06297	08404	10813
27	00031	00320	00914	01812	03015	04520	06330	08442	10855
28	0000033	0000328	0000927	0001830	0003037	0004548	0006362	0008479	0010898
29	00036	00335	00939	01847	03060	04576	06395	08517	10941
30	00038	00343	00952	01865	03083	04604	06428	08555	10984
31	0000041	0000350	0000964	0001883	0003105	0004632	0006461	0008593	0011027
32	00043	00358	00977	01901	03128	04660	06494	08631	11070
33	00046	00366	00990	01919	03151	04688	06527	08669	11113
34	0000049	0000374	0001003	0001937	0003175	0004716	0006560	0008708	0011157
35	00052	00382	01016	01955	03198	04744	06594	08746	11200
36	00055	00390	01029	01973	03221	04773	06627	08784	11244
37	0000058	0000398	0001043	0001992	0003244	0004801	0006661	0008823	0011287
38	00061	00406	01056	02010	03268	04829	06694	08862	11331
39	00064	00415	01069	02028	03291	04858	06728	08900	11374
40	0000068	0000423	0001083	0002047	0003315	0004887	0006762	0008939	0011418
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43	0000078	0000449	0001124	0002103	0003386	0004973	0006863	0009056	0011550
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45	00086	00466	01152	02141	03434	05031	06931	09134	11638
46	0000089	0000475	0001166	0002160	0003459	0005061	0006966	0009173	0011683
47	00093	00484	01180	02179	03483	05090	07000	09213	11727
48	00097	00493	01194	02198	03507	05119	07034	09252	11772
49	0000102	0000503	0001208	0002218	0003531	0005149	0007069	0009292	0011816
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51	01110	00521	01237	02257	03580	05208	07138	09371	11905
52	0000114	0000531	0001251	0002276	0003605	0005237	0007173	0009411	0011950
53	00119	00540	01266	02296	03630	05267	07208	09451	11995
54	00123	00550	01281	02316	03655	05297	07243	09490	12040
55	0000128	0000559	0001295	0002335	0003680	0005327	0007278	0009531	0012085
56	00133	00569	01310	02355	03705	05357	07313	09571	12130
57	00137	00579	01325	02375	03730	05387	07348	09611	12175
58	0000142	0000589	0001340	0002395	0003755	0005417	0007383	0009651	0012221
59	00147	00599	01355	02416	03780	05448	07418	09691	12266
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Parts for Seconds.

(v.)

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Nat. Versines.

(v.)

	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	
0	0015192	0018373	0021852	0025630	0029704	0034074	0038738	0043695	0048943	0054481	0
1	0015243	0018428	0021913	0025695	0029775	0034149	0038818	0043780	0049033	0054576	1
2	15293	18184	21973	25761	29845	34225	38899	43865	49123	54671	2
3	15344	18540	22034	25827	29916	34300	38979	43951	49213	54766	3
4	0015395	0018595	0022095	0025892	0029986	0034376	0039060	0044036	0049304	0054861	4
5	15446	18651	22156	25958	30057	34452	39140	44121	49394	54956	5
6	15497	18707	22217	26024	30128	34527	39221	44207	49484	55051	6
7	0015548	0018763	0022278	0026090	0030199	0034603	0039302	0044293	0049575	0055146	7
8	15599	18819	22339	26166	30270	34679	39382	44378	49665	55242	8
9	15650	18876	22400	26222	30341	34755	39463	44464	49756	55337	9
10	0015701	0018932	0022461	0026288	0030412	0034831	0039544	0044550	0049846	0055432	10
11	15753	18988	22523	26355	30483	34907	39625	44636	49937	55528	11
12	15804	19045	22584	26421	30555	34983	39706	44722	50028	55624	12
13	0015856	0019101	0022646	0026488	0030626	0035060	0039787	0044808	0050119	0055719	13
14	15908	19158	22707	26554	30697	35136	39869	44894	50210	55815	14
15	15959	19215	22769	26621	30769	35213	39950	44980	50301	55911	15
16	0016011	0019271	0022831	0026687	0030841	0035289	0040032	0045066	0050392	0056007	16
17	16063	19328	22892	26754	30912	35366	40113	45153	50483	56103	17
18	16115	19385	22954	26821	30984	35443	40195	45239	50574	56199	18
19	0016167	0019442	0023016	0026888	0031056	0035519	0040276	0045326	0050666	0056295	19
20	16219	19499	23078	26955	31128	35596	40358	45412	50757	56391	20
21	16271	19557	23141	27022	31200	35673	40440	45499	50849	56488	21
22	0016324	0019614	0023203	0027089	0031272	0035750	0040522	0045586	0050940	0056584	22
23	16376	19671	23265	27157	31344	35827	40604	45673	51032	56681	23
24	16428	19729	23328	27224	31417	35905	40686	45760	51124	56777	24
25	0016481	0019786	0023390	0027292	0031489	0035982	0040768	0045847	0051216	0056874	25
26	16534	19844	23453	27359	31562	36059	40850	45934	51308	56971	26
27	16586	19902	23515	27427	31634	36137	40933	46021	51400	57068	27
28	0016639	0019959	0023578	0027494	0031707	0036214	0041015	0046108	0051492	0057164	28
29	16692	20017	23641	27562	31780	36292	41098	46196	51584	57261	29
30	16745	20075	23704	27630	31852	36369	41180	46283	51676	57358	30
31	0016798	0020133	0023767	0027698	0031925	0036447	0041263	0046371	0051769	0057456	31
32	16851	20191	23830	27766	31998	36525	41346	46458	51861	57553	32
33	16904	20250	23893	27834	32071	36603	41428	46546	51954	57650	33
34	0016958	0020308	0023956	0027902	0032144	0036681	0041511	0046634	0052046	0057747	34
35	17011	20366	24020	27971	32217	36759	41594	46721	52139	57845	35
36	17065	20425	24083	28039	32291	36837	41677	46809	52232	57942	36
37	0017118	0020483	0024147	0028107	0032364	0036916	0041761	0046897	0052324	0058040	37
38	17172	20542	24210	28176	32438	36994	41844	46985	52417	58138	38
39	17226	20601	24274	28245	32511	37072	41927	47074	52510	58236	39
40	0017279	0020659	0024338	0028213	0032585	0037151	0042010	0047162	0052603	0058333	40
41	17333	20718	24401	28282	32658	37230	42094	47250	52696	58431	41
42	17387	20777	24465	28351	32732	37308	42177	47338	52790	58529	42
43	0017441	0020836	0024529	0028520	0032806	0037387	0042261	0047427	0052883	0058628	43
44	17495	20895	24593	28589	32880	37466	42345	47516	52976	58726	44
45	17550	20954	24658	28658	32954	37545	42429	47604	53070	58824	45
46	0017604	0021014	0024722	0028727	0033028	0037624	0042512	0047693	0053163	0058922	46
47	17658	21073	24786	28796	33102	37703	42596	47782	53257	59021	47
48	17713	21133	24851	28866	33177	37782	42680	47871	53351	59119	48
49	0017767	0021192	0024915	0028935	0033251	0037861	0042765	0047960	0053444	0059218	49
50	17822	21252	24980	29005	33325	37941	42849	48049	53538	59316	50
51	17877	21311	25044	29074	33400	38020	42933	48138	53632	59415	51
52	0017931	0021371	0025109	0029144	0033474	0038099	0043017	0048227	0053726	0059514	52
53	17986	21431	25174	29214	33549	38179	43102	48316	53820	59613	53
54	18041	21491	25239	29283	33624	38259	43186	48406	53915	59712	54
55	0018096	0021551	0025304	0029353	0033699	0038338	0043271	0048495	0054009	0059811	55
56	18151	21611	25369	29423	33774	38418	43356	48585	54103	59910	56
57	18207	21671	25434	29493	33849	38498	43440	48674	54198	60009	57
58	0018262	0021732	0025499	0029564	0033924	0038578	0043525	0048764	0054292	0060109	58
59	18317	21792	25564	29634	33999	38658	43610	48854	54387	60208	59
60	18373	21852	25630	29704	34074	38738	43695	48943	54481	60307	60

Parts for Seconds.

(v.)

	10°		11°		12°		13°		14°		15°		16°		17°		18°		19°		20°	
"	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'
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24	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	24	
25	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	25	
26	22	23	24	25	26	27	28	29	31	32	33	34	35	36	37	38	39	40	41	42	26	
27	23	24	25	26	27	28	29	31	32	33	34	35	36	37	38	39	41	42	43	44	27	
28	24	25	26	27	28	29	31	32	33	34	35	36	37	39	40	41	42	43	44	45	28	
29	24	26	27	28	29	30	32	33	34	35	36	38	39	40	41	42	43	45	46	47	29	
30	25	27	28	29	30	31	33	34	35	36	38	39	40	41	43	43	45	46	47	49	30	
31	26	27	29	30	31	33	34	35	36	38	39	40	41	43	44	45	46	48	49	50	31	
32	27	28	30	31	32	34	35	36	38	39	40	41	43	44	45	47	48	49	51	52	32	
33	28	29	31	32	33	35	36	37	39	40	41	43	44	45	47	48	49	51	52	53	33	
34	29	30	31	33	34	36	37	38	40	41	43	44	45	47	48	50	51	52	54	55	34	
35	29	31	32	34	35	37	38	40	41	42	44	45	47	48	50	51	52	54	55	57	35	
36	30	32	33	35	36	38	39	41	42	44	45	47	48	50	51	52	54	55	57	58	36	
37	31	33	34	36	37	39	40	42	43	45	46	48	49	51	52	54	55	57	58	60	37	
38	32	34	35	37	38	40	41	43	45	46	48	49	51	52	54	55	57	58	60	61	38	
39	33	34	36	38	39	41	43	44	46	47	49	50	52	54	55	57	58	60	62	63	39	
40	34	35	37	39	40	42	44	45	47	49	50	52	53	55	57	58	60	62	63	65	40	
41	35	36	38	40	41	43	45	46	48	50	51	53	55	56	58	60	61	63	65	66	41	
42	35	37	39	41	42	44	46	48	49	51	53	54	56	58	60	61	63	65	66	68	42	
43	36	38	40	42	43	45	47	49	50	52	54	56	57	59	61	63	65	66	68	70	43	
44	37	39	41	43	44	46	48	50	52	53	55	57	59	61	62	64	66	68	69	71	44	
45	38	40	42	44	45	47	49	51	53	55	56	58	60	62	64	66	67	69	71	73	45	
46	39	41	43	44	46	48	50	52	54	56	58	60	61	63	65	67	69	71	73	74	46	
47	40	42	43	45	47	49	51	53	55	57	59	61	63	65	67	69	70	72	74	76	47	
48	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	48	
49	41	43	45	47	49	51	53	55	57	59	61	63	65	68	69	71	73	75	77	79	49	
50	42	44	46	48	50	52	55	57	59	61	63	65	67	69	71	73	75	77	79	80	50	
51	43	45	46	49	51	54	56	58	60	62	64	66	68	70	72	74	76	78	80	83	51	
52	44	46	47	50	52	55	57	59	61	63	65	67	69	72	74	76	78	80	82	84	52	
53	45	47	48	51	53	56	58	60	62	64	67	69	71	73	75	77	79	82	84	86	53	
54	45	48	49	52	54	57	59	61	63	66	68	70	72	74	77	79	80	83	85	87	54	
55	46	49	50	53	55	58	60	62	65	67	69	71	73	76	78	80	82	85	87	89	55	
56	47	49	51	54	56	59	61	63	66	68	70	73	74	77	79	82	84	86	88	91	56	
57	48	50	52	55	57	60	62	65	67	69	72	74	76	78	81	83	85	88	90	92	57	
58	49	51	53	56	58	61	63	66	68	70	73	75	77	80	82	85	87	89	92	94	58	
59	50	52	54	57	59	62	64	67	69	72	74	76	79	81	84	86	88	91	93	95	59	
60	50½	53	55½	58	60½	63	65½	68	70	73	75	78	80	83	85	87½	90	92	95	97	60	

Nat. Versines.

(v.)

	20°	21°	22°	23°	24°	25°	26°	27°	28°	29°	
0	0060307	0066420	0072816	0079495	0086454	0093692	0101206	0108993	0117052	0125380	0
1	0060407	0066524	0072925	0079609	0086573	0093815	0101333	0109126	0117189	0125521	1
2	60506	66628	73034	79723	86691	93938	01461	09258	17326	25662	2
3	60606	66733	73143	79836	86810	94061	01589	09390	17462	25804	3
4	0060706	0066837	0073253	0079950	0086928	0094185	0101717	0109522	0117599	0125945	4
5	60806	66942	73362	80064	87047	94308	01844	09655	17736	26086	5
6	60906	67046	73471	80178	87166	94431	01972	09787	17873	26228	6
7	0061006	0067151	0073581	0080293	0087285	0094555	0102100	0109920	0118010	0126369	7
8	61106	67256	73690	80407	87403	94678	02228	10052	18147	26511	8
9	61206	67361	73800	80521	87522	94802	02357	10185	18284	26652	9
10	0061306	0067466	0073910	0080636	0087642	0094925	0102485	0110318	0118422	0126794	10
11	61407	67571	74019	80750	87761	95049	02613	10451	18559	26936	11
12	61507	67676	74129	80865	87880	95173	02742	10584	18696	27078	12
13	0061607	0067781	0074239	0080979	0087999	0095297	0102870	0110717	0118834	0127220	13
14	61708	67887	74349	81094	88118	95421	02999	10850	18972	27362	14
15	61809	67992	74459	81209	88238	95545	03127	10983	19109	27504	15
16	0061909	0068098	0074570	0081324	0088357	0095669	0103256	0111116	0119247	0127646	16
17	62010	68203	74680	81439	88477	95793	03385	11249	19385	27788	17
18	62111	68309	74790	81554	88597	95917	03514	11383	19523	27931	18
19	0062212	0068414	0074901	0081669	0088716	0096042	0103642	0111516	0119661	0128073	19
20	62313	68520	75011	81784	88836	96166	03771	11650	19799	28216	20
21	62414	68626	75122	81899	88956	96291	03901	11783	19937	28358	21
22	0062515	0068732	0075232	0082014	0089076	0096415	0104030	0111917	0120075	0128501	22
23	62617	68838	75343	82130	89196	96540	04159	12051	20213	28643	23
24	62718	68944	75454	82245	89316	96665	04288	12185	20351	28786	24
25	0062819	0069050	0075565	0082361	0089436	0096789	0104418	0112318	0120490	0128929	25
26	62921	69157	75676	82477	89557	96914	04547	12452	20628	29072	26
27	63023	69263	75787	82592	89677	97039	04677	12587	20767	29215	27
28	0063124	0069369	0075898	0082708	0089798	0097164	0104806	0112721	0120905	0129358	28
29	63226	69476	76009	82824	89918	97289	04936	12855	21044	29501	29
30	63328	69582	76120	82940	90039	97415	05066	12989	21183	29644	30
31	0063430	0069689	0076232	0083056	0090159	0097540	0105195	0113123	0121322	0129788	31
32	63532	69796	76343	83172	90280	97665	05325	13258	21461	29931	32
33	63634	69903	76455	83288	90401	97791	05455	13392	21600	30074	33
34	0063736	0070009	0076566	0083404	0090522	0097916	0105585	0113527	0121739	0130218	34
35	63838	70116	76678	83521	90643	98042	05716	13662	21878	30361	35
36	63940	70223	76790	83637	90764	98167	05846	13796	22017	30505	36
37	0064043	0070331	0076902	0083754	0090885	0098293	0105976	0113931	0122156	0130649	37
38	64145	70438	77013	83870	91006	98419	06106	14066	22296	30793	38
39	64248	70545	77125	83987	91127	98545	06237	14201	22435	30936	39
40	0064350	0070652	0077238	0084104	0091249	0098671	0106367	0114336	0122575	0131080	40
41	64453	70760	77350	84220	91370	98797	06498	14471	22714	31224	41
42	64556	70867	77462	84337	91492	98923	06629	14606	22854	31368	42
43	0064659	0070975	0077574	0084454	0091613	0099049	0106759	0114742	0122994	0131513	43
44	64762	71083	77687	84571	91735	99175	06890	14877	23133	31657	44
45	64865	71190	77799	84688	91857	99302	07021	15012	23273	31801	45
46	0064968	0071298	0077912	0084806	0091979	0099428	0107152	0115148	0123413	0131946	46
47	65071	71406	78024	84923	92100	99555	07283	15283	23553	32090	47
48	65174	71514	78137	85040	92222	99681	07414	15419	23693	32234	48
49	0065278	0071622	0078250	0085158	0092345	0099808	0107545	0115555	0123833	0132379	49
50	65381	71730	78362	85275	92467	99935	07677	15690	23974	32524	50
51	65485	71839	78475	85393	92589	10061	07808	15826	24114	32669	51
52	0065588	0071947	0078588	0085510	0092711	0100188	0107939	0115962	0124254	0132813	52
53	65692	72055	78701	85628	92833	00315	08071	16098	24395	32958	53
54	65795	72164	78815	85746	92956	00442	08202	16234	24535	33103	54
55	0065899	0072272	0078928	0085964	0093078	0100569	0108334	0116370	0124676	0133248	55
56	66003	72331	79041	85982	93201	00696	08466	16507	24817	33393	56
57	66107	72490	79154	86100	93324	00824	08598	16643	24957	33539	57
58	0066211	0072598	0079268	0086218	0093446	0100951	0108729	0116779	0125098	0133684	58
59	66315	72707	79381	86336	93569	01078	08861	16916	25239	33829	59
60	66420	72816	79495	86454	93692	01206	08993	17052	25380	33975	60

Parts for Seconds.

(v.)

	20°		21°		22°		23°		24°		25°		26°		27°		28°		29°		30°	
n	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	n
1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
2	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	2
3	5	5	5	5	5	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	3
4	7	7	7	7	7	7	8	8	8	8	8	8	9	9	9	9	9	9	9	10	10	4
5	8	8	9	9	9	9	9	10	10	10	10	11	11	11	11	11	11	12	12	12	12	5
6	10	10	10	11	11	11	11	12	12	12	12	13	13	13	13	13	14	14	14	14	15	6
7	12	12	12	13	13	13	13	14	14	14	14	15	15	15	15	16	16	16	16	17	17	7
8	13	14	14	14	15	15	15	16	16	16	17	17	17	18	18	18	19	19	19	19	19	8
9	15	15	16	16	16	17	17	17	18	18	18	19	19	19	20	20	20	21	21	21	22	9
10	17	17	17	18	18	19	19	19	20	20	20	21	21	22	22	22	23	23	24	24	24	10
11	18	19	19	20	20	20	21	21	22	22	23	23	23	24	24	25	25	25	26	26	27	11
12	20	20	21	21	22	22	23	23	24	24	25	25	25	26	26	27	27	28	28	29	29	12
13	22	22	23	23	24	24	25	25	26	26	27	27	28	28	29	29	30	30	31	31	32	13
14	23	24	24	25	25	26	27	27	28	28	29	29	30	30	31	31	32	32	33	33	34	14
15	25	25	26	27	27	28	28	29	30	30	31	31	32	32	33	34	34	35	35	36	36	15
16	27	27	28	28	29	30	30	31	32	32	33	33	34	35	35	36	36	37	38	38	39	16
17	28	29	30	30	31	32	32	33	34	34	35	35	36	37	37	38	39	39	40	41	41	17
18	30	31	31	32	33	33	34	35	35	36	37	38	38	39	40	40	41	42	42	43	44	18
19	32	32	33	34	35	35	36	37	37	38	39	40	40	41	42	43	43	44	45	45	46	19
20	33	34	35	36	36	37	38	39	40	41	42	42	43	44	45	46	46	47	48	48	49	20
21	35	36	36	37	38	39	40	41	41	42	43	44	45	45	46	47	48	49	49	50	51	21
22	36	37	38	39	40	41	42	43	43	44	45	46	47	48	48	49	50	51	52	53	53	22
23	38	39	40	41	42	43	44	44	45	46	47	48	49	50	51	51	52	53	54	55	56	23
24	40	41	42	43	44	45	45	46	47	48	49	50	51	52	53	54	55	56	57	58	58	24
25	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	25
26	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	61	63	26
27	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	63	65	27
28	46	48	49	50	51	52	53	54	55	56	57	58	59	61	62	63	64	65	66	67	68	28
29	48	49	50	52	53	54	55	56	57	58	59	61	62	63	64	65	66	67	68	69	70	29
30	50	51	52	53	55	56	57	58	59	60	61	63	64	65	66	67	68	69	71	72	73	30
31	51	53	54	55	56	58	59	60	61	62	64	65	66	67	68	69	71	72	73	74	75	31
32	53	54	56	57	58	59	61	62	63	64	66	67	68	69	70	72	73	74	75	76	78	32
33	55	56	57	59	60	61	63	64	65	66	68	69	70	71	73	74	75	76	78	79	80	33
34	56	58	59	60	62	63	64	66	67	68	70	71	72	74	75	76	77	79	80	81	82	34
35	58	59	61	62	64	65	66	68	69	70	72	73	74	76	77	78	80	81	82	84	85	35
36	60	61	63	64	65	67	68	70	71	72	74	75	76	78	79	81	82	83	85	86	87	36
37	61	63	64	66	67	69	70	72	73	74	76	77	79	80	81	83	84	86	87	88	90	37
38	63	65	66	68	69	70	72	73	75	76	78	79	81	82	84	85	86	88	89	91	92	38
39	65	66	68	69	71	72	74	75	77	78	80	81	83	84	86	87	89	90	92	93	95	39
40	66	68	70	71	73	74	76	77	79	80	82	83	85	87	88	90	91	93	94	95	97	40
41	68	70	71	73	74	76	78	79	81	82	84	86	87	89	90	92	93	95	96	98	99	41
42	70	71	73	75	76	78	80	81	83	84	86	88	89	91	92	94	96	97	99	100	102	42
43	71	73	74	76	78	80	81	83	85	86	88	90	91	93	95	96	98	99	101	103	104	43
44	73	75	76	78	80	82	83	85	87	88	90	92	93	95	97	98	100	102	103	105	107	44
45	75	76	78	80	82	83	85	87	89	90	92	94	96	97	99	101	102	104	106	107	109	45
46	76	78	80	82	84	85	87	89	91	92	94	96	98	100	101	103	105	106	108	110	112	46
47	78	80	82	84	85	87	89	91	93	95	96	98	100	102	103	105	107	109	110	112	114	47
48	80	81	83	85	87	89	91	93	95	97	98	100	102	104	106	107	109	111	113	115	116	48
49	81	83	85	87	89	91	93	95	97	99	100	102	104	106	108	110	112	113	115	117	119	49
50	83	85	87	89	91	93	95	97	99	101	102	104	106	108	110	112	114	116	118	119	121	50
51	85	87	89	91	93	95	97	99	101	103	105	106	108	110	112	114	116	118	120	122	124	51
52	86	88	90	92	94	96	98	101	103	105	107	109	110	112	114	116	118	120	122	124	126	52
53	88	90	92	94	96	98	100	102	105	107	109	111	113	115	117	119	121	123	125	127	128	53
54	90	92	94	96	98	100	102	104	106	109	111	113	115	117	119	121	123	125	127	129	131	54
55	91	93	96	98	100	102	104	106	108	111	113	115	117	119	121	123	125	127	129	131	133	55
56	93	95	97	99	102	104	106	108	110	113	115	117	119	121	123	125	127	130	132	134	136	56
57	95	97	99	101	104	106	108	110	112	115	117	119	121	123	125	128	130	132	134	136	138	57
58	96	98	101	103	105	108	110	112	114	117	119	121	123	125	128	130	132	134	136	138	141	58
59	98	100	103	105	107	109	112	114	116	119	121	123	125	128	130	131	134	137	139	141	143	59
60	99	102	104	107	109	111	114	116	118	121	123	125	127	130	132	134	136	139	141	143	145	60

Nat. Versines.

(v.)

	30°	31°	32°	33°	34°	35°	36°	37°	38°	39°	
0	0133975	0142833	0151952	0161329	0170962	0180848	0190983	0201364	0211989	0222854	0
1	0134120	0142983	0152106	0161438	0171125	0181015	0191154	0201540	0212168	0223037	1
2	34266	43132	52260	61646	71288	81182	91325	01715	12348	23220	2
3	34411	43262	52415	61805	71451	81349	91496	01890	12527	23403	3
4	0134557	0143433	0152569	0161964	0171614	0181516	0191667	0202065	0212706	0223587	4
5	34703	43583	52723	62122	71777	81683	91839	02241	12885	23770	5
6	34849	43733	52878	62281	71940	81850	92010	02416	13065	23954	6
7	0134994	0143883	0153033	0162440	0172103	0182018	0192181	0202592	0213244	0224137	7
8	35140	44034	53187	62599	72266	82185	92353	02767	13424	24321	8
9	35287	44184	53342	62758	72429	82352	92525	02943	13604	24504	9
10	0135433	0144334	0153497	0162917	0172593	0182520	0192696	0203119	0213783	0224688	10
11	35579	44485	53652	63076	72756	82687	92868	03294	13963	24872	11
12	35725	44636	53807	63236	72919	82855	93040	03470	14143	25055	12
13	0135872	0144786	0153962	0163395	0173083	0183023	0193211	0203646	0214323	0225239	13
14	36018	44937	54117	63554	73247	83191	93383	03822	14503	25423	14
15	36164	45088	54272	63714	73410	83358	93555	03998	14683	25607	15
16	0136311	0145239	0154427	0163873	0173574	0183526	0193727	0204174	0214863	0225791	16
17	36458	45390	54583	64033	73738	83694	93899	04350	15043	25976	17
18	36604	45541	54738	64193	73902	83862	94072	04526	15224	26160	18
19	0136751	0145692	0154894	0164352	0174066	0184030	0194244	0204703	0215404	0226344	19
20	36898	45844	55049	64512	74230	84199	94416	04879	15584	26528	20
21	37045	45995	55205	64672	74394	84367	94589	05056	15765	26713	21
22	0137192	0146146	0155360	0164832	0174558	0184535	0194761	0205232	0215945	0226897	22
23	37339	46298	55516	64992	74722	84704	94934	05409	16126	27082	23
24	37486	46449	55672	65152	74886	84872	95106	05585	16306	27266	24
25	0137634	0146601	0155828	0165312	0175051	0185041	0195279	0205762	0216487	0227451	25
26	37781	46752	55984	65473	75215	85209	95452	05939	16668	27636	26
27	37928	46904	56140	65633	75380	85378	95624	06116	16849	27821	27
28	0138076	0147056	0156296	0165793	0175544	0185547	0195797	0206293	0217030	0228005	28
29	38223	47208	56452	65954	75709	85716	95970	06470	17211	28190	29
30	38371	47360	56609	66114	75874	85881	96143	06647	17392	28375	30
31	0138518	0147512	0156765	0166275	0176039	0186053	0196316	0206824	0217573	0228560	31
32	38666	47664	56921	66435	76203	86222	96489	07001	17754	28745	32
33	38814	47816	57078	66596	76368	86392	96662	07178	17935	28931	33
34	0138962	0147963	0157234	0166757	0176533	0186561	0196836	0207355	0218117	0229116	34
35	39110	48121	57391	66918	76698	86730	97009	07533	18298	29301	35
36	39258	48273	57548	67079	76864	86899	97182	07710	18479	29487	36
37	0139406	0148425	0157704	0167240	0177029	0187069	0197356	0207888	0218661	0229672	37
38	39554	48578	57861	67401	77194	87238	97529	08065	18843	29858	38
39	39702	48731	58018	67562	77359	87407	97703	08243	19024	30043	39
40	0139850	0148883	0158175	0167723	0177525	0187577	0197877	0208421	0219206	0230229	40
41	39999	49036	58332	67884	77690	87747	98050	08599	19388	30415	41
42	40148	49189	58489	68046	77856	87916	98224	08776	19570	30600	42
43	0140296	0149342	0158646	0168207	0178022	0188086	0198398	0208954	0219751	0230786	43
44	40445	49495	58804	68369	78187	88256	98572	09132	19933	30972	44
45	40594	49648	58961	68530	78353	88426	98746	09310	20115	31158	45
46	0140742	0149801	0159118	0168692	0178519	0188596	0198920	0209488	0220298	0231344	46
47	40891	49954	59276	68854	78685	88766	99094	09667	20480	31530	47
48	41040	50107	59433	69015	78851	88936	99269	09845	20662	31716	48
49	0141189	0150261	0159591	0169177	0179017	0189106	0199443	0210023	0220844	0231903	49
50	41338	50414	59749	69339	79183	89277	99617	10202	21027	32089	50
51	41487	50567	59906	69501	79349	89447	99792	10380	21209	32275	51
52	0141636	0150721	0160064	0169663	0179515	0189617	0199966	0210559	0221392	0232461	52
53	41786	50875	60222	69825	79682	89788	200141	10737	21574	32648	53
54	41935	51028	60380	69988	79848	89958	00315	10916	21757	32835	54
55	0142084	0151182	0160538	0170150	0180015	0190129	0200490	0211095	0221940	0233021	55
56	42234	51336	60696	70312	80181	90300	00665	11273	22122	33208	56
57	42384	51490	60854	70475	80348	90470	00840	11452	22305	33395	57
58	0142533	0151644	0161013	0170637	0180514	0190641	0201014	0211631	0222488	0233582	58
59	42683	51798	61171	70800	80681	90812	01189	11810	22671	33769	59
60	42833	51952	61329	70962	80848	90983	01364	11989	22854	33956	60

Parts for Seconds.

(v.)

	30°		31°		32°		33°		34°		35°		36°		37°		38°		39°		40°	
	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'
1	2	2	3	3	3	3	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1
2	5	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	2
3	7	7	8	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9	3
4	10	10	10	10	10	10	11	11	11	11	11	11	12	12	12	12	12	12	12	12	12	4
5	12	12	13	13	13	13	13	14	14	14	14	14	14	15	15	15	15	15	15	15	16	5
6	15	15	15	15	16	16	16	16	16	17	17	17	17	18	18	18	18	18	18	19	19	6
7	17	17	18	18	18	18	19	19	19	19	20	20	20	20	21	21	21	21	21	22	22	7
8	19	20	20	20	21	21	21	21	22	22	22	23	23	23	23	24	24	24	24	25	25	8
9	22	22	23	23	23	24	24	24	25	25	25	26	26	26	27	27	27	27	28	28	28	9
10	24	25	25	26	26	26	27	27	27	28	28	28	29	29	30	30	30	31	31	31	31	10
11	27	27	28	28	29	29	29	30	30	31	31	31	32	32	32	33	33	33	34	34	34	11
12	29	30	30	31	31	32	32	33	33	33	34	34	35	35	35	36	36	37	37	37	37	12
13	32	32	33	33	34	34	35	35	36	36	37	37	37	38	38	39	39	40	40	41	41	13
14	34	34	35	35	36	36	37	37	38	38	39	39	40	40	41	41	42	42	43	43	44	14
15	36	37	37	38	39	40	40	41	41	42	42	43	43	44	44	45	45	46	46	47	47	15
16	39	39	40	41	41	42	42	43	44	44	45	45	46	46	47	47	48	48	49	49	50	16
17	41	42	42	43	44	44	45	45	46	47	47	48	48	49	50	50	51	51	52	52	53	17
18	44	44	45	46	46	47	48	48	49	49	50	51	51	52	53	53	54	54	55	56	56	18
19	46	47	47	48	49	49	50	51	52	52	53	53	54	55	55	56	57	57	58	59	59	19
20	48	49	50	51	51	52	53	54	55	56	56	57	58	58	59	60	60	61	62	62	62	20
21	51	52	52	53	54	55	55	56	57	58	58	59	60	60	61	62	63	63	64	65	65	21
22	53	54	55	56	57	57	58	59	60	60	61	62	63	63	64	65	66	66	67	68	69	22
23	56	57	57	58	59	60	61	62	63	63	64	65	66	66	67	68	69	69	70	71	72	23
24	58	59	60	61	62	63	63	64	65	66	67	68	68	69	70	71	72	72	73	74	75	24
25	61	62	62	63	64	65	66	67	68	69	70	70	71	72	73	74	75	75	76	77	78	25
26	63	64	65	66	67	68	69	70	71	71	72	73	74	75	76	77	78	78	79	80	81	26
27	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	81	82	83	84	27
28	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	84	85	86	87	28
29	70	71	72	73	75	76	77	78	79	80	81	82	83	84	85	86	87	87	88	89	90	29
30	73	74	75	76	77	78	79	80	82	82	83	84	85	87	88	89	90	91	92	93	93	30
31	75	76	77	79	80	81	82	83	84	85	86	87	88	89	90	91	93	94	95	96	97	31
32	78	79	80	81	82	83	85	86	87	88	89	90	91	92	93	94	96	97	98	99	100	32
33	80	81	82	84	85	86	87	88	90	91	92	93	94	95	96	97	98	100	101	102	103	33
34	82	84	85	86	87	89	90	91	92	93	95	96	97	98	99	100	101	103	104	105	106	34
35	85	86	87	89	90	91	92	94	95	96	97	99	100	101	102	103	104	106	107	108	109	35
36	87	89	90	91	92	94	95	96	98	99	100	101	103	104	105	106	107	109	110	111	112	36
37	90	91	92	94	95	96	98	99	101	102	103	104	105	107	108	109	110	112	113	114	115	37
38	92	94	95	96	98	99	100	102	103	104	106	107	108	110	111	112	113	115	116	117	118	38
39	95	96	97	99	100	102	103	104	106	107	108	110	111	112	114	115	116	118	119	120	122	39
40	97	98	100	101	103	104	106	107	109	110	111	113	114	115	117	118	119	121	122	123	125	40
41	99	101	102	104	105	107	108	110	111	113	114	115	117	118	120	121	122	124	125	126	128	41
42	102	103	105	106	108	109	111	112	114	115	117	118	120	121	123	124	125	127	128	130	131	42
43	104	106	107	109	110	112	114	115	117	118	120	121	123	124	125	127	128	130	131	133	134	43
44	107	108	110	111	113	115	116	118	120	121	122	124	125	127	128	130	131	133	134	136	137	44
45	109	111	112	114	116	117	119	120	122	124	125	127	128	130	131	133	134	136	137	139	140	45
46	112	113	115	117	118	120	121	123	125	126	128	130	131	133	134	136	137	139	140	142	143	46
47	114	116	117	119	121	122	124	126	128	129	131	132	134	136	137	139	140	142	143	145	146	47
48	116	118	120	122	123	125	127	128	131	132	133	135	137	138	140	142	143	145	146	148	150	48
49	119	121	122	124	126	128	129	131	133	135	136	138	140	141	143	145	146	148	149	151	153	49
50	121	123	125	127	128	130	132	134	136	137	139	141	142	144	146	148	149	151	152	154	156	50
51	124	126	127	129	131	133	135	136	139	140	142	144	145	147	149	150	152	154	156	157	159	51
52	126	128	130	132	134	135	137	139	141	143	145	146	148	150	152	153	155	157	159	160	162	52
53	128	130	132	134	136	138	140	142	144	146	147	149	151	153	155	156	158	160	162	163	165	53
54	131	133	135	137	139	141	143	144	147	148	150	152	154	156	158	159	161	163	165	167	168	54
55	133	135	137	139	141	143	145	147	150	151	153	155	157	159	160	162	164	166	168	170	171	55
56	136	138	140	142	144	146	148	150	152	154	156	158	160	162	163	165	167	169	171	173	174	56
57	138	140	142	144	146	148	151	153	155	157	159	160	162	164	166	168	170	172	174	176	178	57
58	141	143	145	147	149	151	153	155	158	159	161	163	165	167	169	171	173	175	177	179	181	58
59	143	145	147	150	152	154	156	158	160	162	164	166	168	170	172	174	176	178	180	182	184	59
60	145	148	150	152	154	156	158	161	163	165	167	169	171	173	175	177	179	181	183	185	187	60

Nat. Versines.

(v.)

	40°	41°	42°	43°	44°	45°	46°	47°	48°	49°	
0	0233956	0245290	0256855	0268646	0280660	0292893	0305342	0318002	0330869	0343941	
1	0234143	0245481	0257050	0268845	0280862	0293099	0305551	0318214	0331086	0344160	1
2	34330	45672	57245	69043	81064	93305	05760	18427	31302	44380	2
3	34517	45863	57439	69242	81267	93511	05970	18640	31518	44600	3
4	0234704	0246054	0257634	0269440	0281469	0293716	0306179	0318853	0331734	0344820	4
5	34891	46245	57829	69639	81671	93922	06389	19066	31951	45039	5
6	35079	46437	58024	69838	81874	94128	06598	19279	32167	45259	6
7	0235266	0246628	0258219	0270036	0282076	0294334	0306808	0319492	0332384	0345479	7
8	35453	46819	58414	70235	82279	94541	07017	19705	32601	45699	8
9	35641	47011	58609	70434	82481	94747	07227	19919	32817	45919	9
10	0235829	0247202	0258805	0270633	0282684	0294953	0307437	0320132	0333034	0346139	10
11	36016	47393	59000	70832	82887	95159	07647	20345	33251	46359	11
12	36204	47585	59195	71031	83089	95366	07857	20559	33467	46579	12
13	0236392	0247777	0259391	0271230	0283292	0295572	0308067	0320772	0333684	0346800	13
14	36580	47968	59586	71430	83495	95779	08277	20986	33901	47020	14
15	36767	48160	59782	71629	83698	95985	08487	21199	34118	47240	15
16	0236955	0248352	0259977	0271828	0283901	0296192	0308697	0321413	0334335	0347461	16
17	37144	48544	60173	72028	84104	96399	08907	21627	34552	47681	17
18	37332	48736	60369	72227	84307	96605	09118	21840	34770	47902	18
19	0237520	0248928	0260565	0272427	0284510	0296812	0309328	0322054	0334987	0348122	19
20	37708	49120	60761	72626	84714	97019	09538	22268	35204	48343	20
21	37896	49312	60956	72826	84917	97226	09749	22482	35421	48563	21
22	0238085	0249504	0261152	0273026	0285120	0297433	0309959	0322696	0335639	0348784	22
23	38273	49697	61348	73225	85324	97640	10170	22910	35856	49005	23
24	38462	49889	61545	73425	85527	97847	10380	23124	36074	49226	24
25	0238650	0250081	0261741	0273625	0285731	0298054	0310591	0323338	0336291	0349447	25
26	38839	50274	61937	73825	85934	98261	10802	23552	36509	49668	26
27	39028	50466	62133	74025	86138	98469	11013	23767	36727	49889	27
28	0239216	0250659	0262330	0274225	0286342	0298676	0311223	0323981	0336944	0350110	28
29	39405	50852	62526	74425	86546	98883	11434	24195	37162	50331	29
30	39594	51044	62723	74626	86750	99091	11645	24410	37380	50552	30
31	0239783	0251237	0262919	0274826	0286953	0299298	0311856	0324624	0337598	0350773	31
32	39972	51430	63116	75026	87157	99506	12067	24839	37816	50994	32
33	40161	51623	63312	75227	87361	99713	12279	25053	38034	51216	33
34	0240350	0251816	0263509	0275427	0287566	0299921	0312490	0325268	0338252	0351437	34
35	40539	52009	63706	75628	87770	300129	12701	25483	38470	51659	35
36	40729	52202	63903	75828	87974	00337	12912	25698	38688	51880	36
37	0240918	0252395	0264100	0276029	0288178	0300544	0313124	0325912	0338906	0352102	37
38	41107	52588	64297	76229	88383	00752	13335	26127	39125	52323	38
39	41297	52782	64494	76430	88587	00960	13547	26342	39343	52545	39
40	0241486	0252975	0264691	0276631	0288791	0301168	0313758	0326557	0339561	0352767	40
41	41676	53168	64888	76832	88996	01377	13970	26772	39780	52988	41
42	41866	53362	65085	77033	89200	01585	14182	26987	39998	53210	42
43	0242055	0253555	0265283	0277234	0289405	0301793	0314393	0327208	0340217	0353432	43
44	42245	53749	65480	77435	89610	02001	14605	27418	40435	53654	44
45	42435	53943	65677	77636	89815	02209	14817	27633	40654	53876	45
46	0242625	0254136	0265875	0277837	0290019	0302418	0315029	0327848	0340873	0354098	46
47	42815	54330	66072	78038	90224	02626	15241	28064	41092	54320	47
48	43005	54524	66270	78240	90429	02835	15453	28279	41310	54542	48
49	0243195	0254718	0266468	0278441	0290634	0303043	0315665	0328495	0341529	0354764	49
50	43385	54912	66665	78643	90839	03252	15877	28710	41748	54987	50
51	43575	55106	66863	78844	91044	03461	16089	28926	41967	55209	51
52	0243766	0255300	0267061	0279046	0291250	0303669	0316302	0329142	0342186	0355431	52
53	43956	55494	67259	79247	91455	03878	16514	29358	42406	55654	53
54	44146	55688	67457	79449	91660	04087	16726	29573	42625	55876	54
55	0244337	0255883	0267655	0279651	0291865	0304296	0316939	0329789	0342844	0356099	55
56	44528	56077	67853	79852	92071	04505	17151	30005	43063	56321	56
57	44718	56271	68051	80054	92276	04714	17364	30221	43283	56544	57
58	0244909	0256466	0268250	0280256	0292482	0304923	0317576	0330437	0343502	0356767	58
59	45100	56661	68448	80458	92688	05132	17789	30653	43721	56990	59
60	45290	56855	68646	80660	92893	05342	18002	30869	43941	57212	60

Nat. Versines.

(v.)

	50°	51°	52°	53°	54°	55°	56°	57°	58°	59°	
0	0357212	0370680	0384338	0398185	0412215	0426424	0440807	0455361	0470081	0484962	0
1	0357435	0370906	0384568	0398417	0412450	0426662	0441048	0455605	0470327	0485211	1
2	57658	71132	84797	98650	12685	26900	41289	55849	70574	85461	2
3	57881	71358	85026	98882	12921	27139	41531	56093	70821	85710	3
4	0358104	0371584	0385256	0399115	0413156	0427377	0441772	0456337	0471068	0485960	4
5	58327	71811	85485	99347	13392	27616	42013	56581	71315	86209	5
6	58550	72037	85715	99580	13628	27854	42255	56826	71562	86459	6
7	0358774	0372263	0385944	0399812	0413863	0428093	0442496	0457070	0471809	0486708	7
8	58997	72490	86174	4000 15	14099	28331	42738	57314	72056	86958	8
9	59220	72716	86404	00278	14335	28570	42979	57558	72303	87208	9
10	0359443	0372943	0386633	0400511	0414571	0428809	0443221	0457803	0472550	0487457	10
11	59667	73109	86863	00743	14806	29048	43463	58047	72797	87707	11
12	59890	73396	87093	00976	15042	29286	43704	58292	73044	87957	12
13	0360114	0373623	0387323	0401209	0415278	0429525	0443946	0458536	0473291	0488207	13
14	60337	73850	87553	01442	15514	29764	44188	58781	73539	88457	14
15	60561	74076	87783	01675	15750	30003	44430	59025	73786	88707	15
16	0360785	0374303	0388013	0401908	0415986	0430242	0444672	0459270	0474033	0488957	16
17	61008	74530	88243	02142	16223	30481	44914	59515	74281	89207	17
18	61232	74757	88473	02375	16459	30720	45156	59760	74528	89457	18
19	0361456	0374984	0388703	0402608	0416695	0430960	0445398	0460004	0474776	0489707	19
20	61680	75211	88933	02841	16931	31199	45640	60249	75023	89957	20
21	61904	75439	89164	03075	17168	31438	45882	60494	75271	90208	21
22	0362128	0375666	0389394	0403308	0417404	0431677	0446124	0460739	0475519	0490458	22
23	62352	75893	89624	03542	17640	31917	46366	60984	75766	90708	23
24	62576	76120	89855	03775	17877	32156	46608	61229	76014	90959	24
25	0362800	0376348	0390085	0404009	0418114	0432396	0446851	0461474	0476262	0491209	25
26	63024	76575	90316	04242	18350	32635	47093	61719	76510	91459	26
27	63249	76803	90546	04476	18587	32875	47335	61955	76758	91710	27
28	0363473	0377030	0390777	0404710	0418823	0433114	0447578	0462210	0477005	0491960	28
29	63697	77258	91008	04943	19060	33354	47820	62455	77253	92211	29
30	63922	77485	91239	05177	19297	33594	48053	62700	77501	92462	30
31	0364146	0377713	0391469	0405411	0419534	0433833	0448306	0462946	0477749	0492712	31
32	64371	77941	91700	05645	19771	34073	48548	63191	77998	92963	32
33	64595	78169	91931	05879	20008	34313	48791	63437	78246	93214	33
34	0364820	0378396	0392162	0406113	0420245	0434553	0449034	0463682	0478494	0493464	34
35	65045	78624	92393	06347	20482	34798	49276	63928	78742	93715	35
36	65269	78852	92624	06581	20719	35033	49519	64173	78990	93966	36
37	0365494	0379080	0392855	0406815	0420956	0435273	0449762	0464419	0479239	0494217	37
38	65719	79308	93066	07049	21193	35513	50005	64664	79487	94468	38
39	65944	79536	93318	07284	21430	35753	50248	64910	79735	94719	39
40	0366169	0379764	0393549	0407518	0421668	0435993	0450491	0465156	0479984	0494970	40
41	66394	79993	93780	07752	21905	36234	50734	65402	80232	95221	41
42	66619	80221	94012	07987	22142	36474	50977	65648	80481	95472	42
43	0366844	0380449	0394243	0408221	0422380	0436714	0451220	0465893	0480729	0495723	43
44	67069	80678	94474	08456	22617	36955	51463	66139	80978	95975	44
45	67295	80906	94706	08690	22855	37195	51707	66385	81227	96226	45
46	0367520	0381134	0394938	0408925	0423092	0437435	0451950	0466631	0481475	0496477	46
47	67745	81363	95169	09160	23330	37676	52193	66878	81724	96729	47
48	67971	81592	95401	09394	23568	37917	52437	67124	81973	96980	48
49	0368196	0381820	0395633	0409629	0423805	0438157	0452680	0467370	0482222	0497231	49
50	68422	82049	95864	09864	24043	38398	52924	67616	82471	97483	50
51	68647	82278	96096	10099	24281	38639	53167	67862	82720	97734	51
52	0368873	0382506	0396328	0410334	0424519	0438879	0453411	0468109	0482969	0497986	52
53	69098	82735	96560	10569	24757	39120	53654	68355	83218	98238	53
54	69324	82964	96792	10804	24995	39361	53898	68601	83467	98489	54
55	0369550	0383193	0397024	0411039	0425233	0439602	0454142	0468848	0483716	0498741	55
56	69776	83422	97256	11274	25471	39843	54385	69094	83965	98993	56
57	70002	83651	97488	11509	25709	40084	54629	69341	84214	99244	57
58	0370228	0383880	0397720	0411744	0425947	0440325	0454873	0469587	0484463	0499496	58
59	70454	84109	97953	11979	26185	40566	55117	69834	84713	99746	59
60	70680	84338	98185	12215	26424	40807	55361	70081	84962	500000	60

Parts for Seconds.

(v.)

	50°		51°		52°		53°		54°		55°		56°		57°		58°		59°		60°	
	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	"
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3	11	11	11	11	11	12	12	12	12	12	12	12	12	12	12	12	12	12	12	13	13	3
4	15	15	15	15	15	15	16	16	16	16	16	16	16	16	16	16	17	17	17	17	17	4
5	19	19	19	19	19	19	19	20	20	20	20	20	20	20	20	20	21	21	21	21	21	5
6	22	22	23	23	23	23	23	24	24	24	24	24	24	24	25	25	25	25	25	25	25	6
7	26	26	26	27	27	27	27	27	28	28	28	28	28	28	29	29	29	29	29	29	29	7
8	30	30	30	30	31	31	31	31	31	32	32	32	32	32	32	33	33	33	33	33	34	8
9	33	34	34	34	34	35	35	35	35	36	36	36	36	36	37	37	37	37	37	38	38	9
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13	48	49	49	49	50	50	50	51	51	51	52	52	52	53	53	53	53	54	54	54	55	13
14	52	52	52	53	53	54	54	55	55	55	56	56	56	57	57	57	58	58	58	58	59	14
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16	59	60	60	61	61	62	62	62	63	63	64	64	64	65	65	65	66	66	66	67	67	16
17	63	64	64	64	65	65	66	66	67	67	68	68	68	69	69	70	70	70	71	71	71	17
18	67	67	68	68	69	69	70	70	71	71	72	72	73	73	74	74	74	75	75	75	76	18
19	71	71	72	72	73	73	74	74	75	75	76	76	77	77	78	78	78	79	79	79	80	19
20	74	75	75	76	76	77	77	78	78	79	79	80	80	81	81	82	82	83	83	84	84	20
21	78	79	79	80	80	81	81	82	82	83	83	84	84	85	85	86	86	87	87	88	88	21
22	82	82	83	83	84	85	85	86	86	87	87	88	88	89	89	90	90	91	91	92	92	22
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24	89	90	90	91	92	92	93	94	94	95	95	96	96	97	98	98	99	99	100	100	101	24
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31	115	116	117	118	118	119	120	121	122	122	123	124	125	125	126	127	127	128	129	130	130	31
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36	134	135	136	137	138	138	139	140	141	142	143	144	145	146	146	147	148	149	150	150	151	36
37	137	139	139	140	141	142	143	144	145	146	147	148	149	150	150	151	152	153	154	155	155	37
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39	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	159	160	161	162	163	164	39
40	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	164	165	166	167	168	40
41	152	153	154	156	157	158	159	160	161	162	163	164	165	166	167	168	169	169	170	171	172	41
42	156	157	158	159	160	162	163	164	165	166	167	168	169	170	171	172	173	174	175	175	176	42
43	160	161	162	163	164	165	166	168	169	170	171	172	173	174	175	176	177	178	179	180	181	43
44	163	165	166	167	168	169	170	171	173	174	175	176	177	178	179	180	181	182	183	184	185	44
45	167	168	170	171	172	173	174	175	177	178	179	180	181	182	183	184	185	186	187	188	189	45
46	171	172	173	175	176	177	178	179	180	182	183	184	185	186	187	188	189	191	191	192	193	46
47	175	176	177	178	180	181	182	183	184	185	187	188	189	190	191	192	193	194	195	196	197	47
48	178	180	181	182	183	185	186	187	188	190	191	192	193	194	195	196	197	198	199	201	202	48
49	182	183	185	186	187	188	190	191	192	193	195	196	197	198	199	200	201	203	204	205	206	49
50	186	187	188	190	191	192	194	195	196	197	199	200	201	202	203	204	206	207	208	209	210	50
51	189	191	192	194	195	196	197	199	200	201	203	204	205	206	207	209	210	211	212	213	214	51
52	193	195	196	197	199	200	201	203	204	205	207	208	209	210	211	213	214	215	216	217	218	52
53	197	198	200	201	203	204	205	207	208	209	210	212	213	214	215	217	218	219	220	221	223	53
54	201	202	203	205	206	208	209	210	212	213	214	216	217	218	220	221	222	223	224	226	227	54
55	204	206	207	209	210	212	213	214	216	217	218	220	221	222	224	225	226	227	229	230	231	55
56	208	209	211	212	214	215	217	218	220	221	222	224	225	226	228	229	230	232	233	234	235	56
57	212	213	215	216	218	219	221	222	224	225	226	228	229	230	232	233	234	236	237	238	239	57
58	215	217	219	220	222	223	225	226	228	229	230	232	233	234	236	237	238	240	241	242	244	58
59	219	221	222	224	225	227	228	230	231	233	234	236	237	239	240	241	243	244	245	246	248	59
60	223	224	226	228	229	231	232	234	235	237	238	240	241	243	244	245	247	248	249	251	252	60

(v.) Nat. Versines										
	60°	61°	62°	63°	64°	65°	66°	67°	68°	69°
0	0500000	0515190	0530528	0546009	0561629	0577382	0593263	0609269	0625393	0641632
1	0500252	0515445	0530785	0546269	0561890	0577645	0593529	0609537	0625663	0641904
2	00504	15699	31042	46528	62152	77909	93795	09804	25933	42175
3	00756	15954	31299	46787	62413	78173	94061	10072	26203	42447
4	0501008	0516208	0531556	0547046	0562675	0578437	0594327	0610340	0626472	0642719
5	01260	16463	31813	47306	62937	78700	94592	10608	26742	42990
6	01512	16718	32070	47565	63198	78964	94858	10876	27012	43262
7	0501764	0516972	0532327	0547825	0563460	0579228	0595121	0611144	0627282	0643534
8	02017	17227	32584	48084	63722	79492	95390	11412	27552	43806
9	02269	17482	32842	48344	64083	79756	95656	11680	27822	44077
10	0502521	0517737	0533099	0548603	0564245	0580020	0595922	0611948	0628092	0644349
11	02774	17991	33356	48863	64507	80284	96189	12216	28362	44621
12	03026	18246	33613	49122	64769	80548	96455	12484	28632	44893
13	0503278	0518501	0533871	0549382	0565031	0580812	0596721	0612753	0628902	0645165
14	03531	18756	34128	49642	65293	81076	96987	13021	29172	45437
15	03783	19011	34385	49902	65555	81340	97253	13289	29443	45709
16	0504036	0519266	0534643	0550161	0565817	0581604	0597520	0613557	0629713	0645981
17	04289	19521	34900	50421	66079	81869	97786	13826	29983	46253
18	04541	19776	35158	50681	66341	82133	98052	14094	30253	46525
19	0504794	0520032	0535415	0550941	0566603	0582397	0598319	0614362	0630523	0646797
20	05047	20287	35673	51201	66865	82661	98585	14631	30794	47069
21	05299	20542	35931	51461	67127	82926	98851	14899	31064	47342
22	0505552	0520797	0536188	0551721	0567390	0583190	0599118	0615168	0631335	0647614
23	05805	21053	36446	51981	67652	83455	99384	15436	31605	47886
24	06058	21308	36704	52241	67914	83719	99651	15705	31875	48158
25	0506311	0521564	0536962	0552501	0568177	0583984	0599917	0615973	0632146	0648431
26	06564	21819	37220	52761	68439	84248	600184	16242	32416	48703
27	06817	22074	37477	53021	68701	84513	00451	16510	32687	48975
28	0507070	0522330	0537735	0553282	0568964	0584777	0600717	0616779	0632957	0649248
29	07323	22586	37993	53542	69226	85042	00984	17048	33228	49520
30	07576	22841	38251	53802	69489	85307	01251	17317	33499	49793
31	0507830	0523097	0538509	0554062	0569751	0585571	0601518	0617585	0633769	0650065
32	08083	23353	38767	54323	70014	85836	01784	17854	34040	50338
33	08336	23608	39026	54583	70277	86101	02051	18123	34311	50610
34	0508589	0523864	0539284	0554844	0570539	0586366	0602318	0618392	0634582	0650883
35	08843	24120	39542	55104	70802	86631	02585	18661	34852	51155
36	09096	24376	39800	55365	71065	86896	02852	18930	35123	51428
37	0509350	0524632	0540058	0555625	0571328	0587160	0603119	0619199	0635394	0651701
38	09603	24888	40317	55886	71590	87425	03386	19468	35665	51973
39	09857	25144	40575	56147	71853	87690	03653	19737	35936	52246
40	0510110	0525400	0540833	0556407	0572116	0587955	0603920	0620006	0636207	0652519
41	10364	25656	41092	56668	72379	88220	04187	20275	36478	52791
42	10617	25912	41350	56929	72642	88486	04454	20544	36749	53064
43	0510871	0526168	0541609	0557190	0572905	0588751	0604722	0620813	0637020	0653337
44	11125	26424	41867	57450	73168	89016	04989	21082	37291	53610
45	11379	26680	42126	57711	73431	89281	05256	21351	37562	53883
46	0511633	0526937	0542385	0557972	0573694	0589546	0605523	0621621	0637833	0654156
47	11886	27193	42643	58233	73957	89812	05791	21890	38104	54429
48	12140	27449	42902	58494	74221	90077	06058	22159	38375	54702
49	0512394	0527706	0543161	0558755	0574484	0590342	0606325	0622429	0638647	0654975
50	12648	27962	43420	59016	74747	90608	06593	22698	38918	55248
51	12902	28218	43678	59277	75010	90873	06860	22967	39189	55521
52	0513156	0528475	0543937	0559538	0575274	0591138	0607128	0623237	0639460	0655794
53	13410	28731	44196	59800	75537	91404	07395	23506	39732	56067
54	13665	28988	44455	60061	75801	91669	07663	23776	40003	56340
55	0513919	0529245	0544714	0560322	0576064	0591935	0607930	0624045	0640275	0656613
56	14173	29501	44973	60583	76327	92201	08198	24315	40546	56887
57	14427	29758	45232	60845	76591	92466	08466	24584	40817	57160
58	0514682	0530015	0545491	0561106	0576854	0592732	0608733	0624854	0641089	0657433
59	14936	30272	45750	61367	77118	92998	09001	25124	41360	57706
60	15190	30528	46009	61629	77382	93263	09269	25393	41632	57980

Parts for Seconds.

(v.)

	60°		61°		62°		63°		64°		65°		66°		67°		68°		69°		70°	
	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'
1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	1
2	8	8	8	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	2
3	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	14	14	14	14	14	3
4	17	17	17	17	17	17	17	17	17	17	18	18	18	18	18	18	18	18	18	18	18	4
5	21	21	21	21	21	21	22	22	22	22	22	22	22	22	22	22	23	23	23	23	23	5
6	25	25	25	26	26	26	26	26	26	26	26	27	27	27	27	27	27	27	27	27	27	6
7	29	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	32	32	32	32	32	7
8	34	34	34	34	34	34	35	35	35	35	35	35	36	36	36	36	36	36	36	36	36	8
9	38	38	38	38	39	39	39	39	39	39	40	40	40	40	40	40	41	41	41	41	41	9
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11	46	46	47	47	47	47	48	48	48	48	49	49	49	49	49	49	50	50	50	50	50	11
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13	55	55	55	55	56	56	56	57	57	57	57	58	58	58	58	58	59	59	59	59	59	13
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15	63	63	64	64	64	64	65	65	65	66	66	66	67	67	67	67	68	68	68	68	68	15
16	67	68	68	68	68	69	69	69	70	70	70	71	71	71	72	72	72	72	73	73	73	16
17	71	72	72	72	73	73	73	74	74	74	75	75	75	76	76	76	76	77	77	77	77	17
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19	80	80	81	81	81	82	82	83	83	83	84	84	84	85	85	85	86	86	86	87	87	19
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21	88	89	89	89	90	90	91	91	92	92	92	93	93	93	94	94	94	95	95	95	96	21
22	92	93	93	94	94	95	95	95	96	96	97	97	97	98	98	99	99	99	100	100	100	22
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35	147	148	148	150	150	150	151	152	153	153	154	154	155	156	156	157	157	158	158	159	159	35
36	151	152	153	153	154	155	156	156	157	158	158	159	159	160	161	161	162	162	163	163	164	36
37	155	156	157	158	158	159	160	161	161	162	163	163	164	164	165	166	166	167	167	168	169	37
38	160	160	161	162	163	163	164	165	166	166	167	168	168	169	170	170	171	171	172	173	173	38
39	164	165	165	166	167	168	168	169	170	171	171	172	173	173	174	175	175	176	177	177	178	39
40	168	169	170	170	171	172	173	174	174	175	176	176	177	178	179	179	180	180	181	182	182	40
41	172	173	174	175	176	176	177	178	179	179	180	181	182	182	183	184	184	185	186	186	187	41
42	176	177	178	179	180	181	181	182	183	184	185	185	186	187	187	188	189	189	190	191	191	42
43	181	181	182	183	184	185	186	187	187	188	189	190	190	191	192	193	193	194	195	195	196	43
44	185	186	187	187	188	189	190	191	192	193	193	194	195	196	197	197	198	198	199	200	200	44
45	189	190	191	192	193	193	194	195	196	197	198	199	199	200	201	201	202	203	204	204	205	45
46	193	194	195	196	197	198	199	200	200	201	202	203	204	205	205	206	207	207	208	209	210	46
47	197	198	199	200	201	202	203	204	205	206	207	207	208	209	210	211	211	212	213	213	214	47
48	202	203	204	205	205	206	207	208	209	210	211	212	213	213	214	215	216	217	217	218	219	48
49	206	207	208	209	210	211	212	213	214	214	215	216	217	218	219	220	220	221	222	222	223	49
50	210	211	212	213	214	215	216	217	218	219	220	221	221	222	223	224	225	226	226	227	228	50
51	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	228	229	230	231	232	232	51
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53	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	237	238	239	240	241	241	53
54	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	244	245	246	54
55	231	232	233	234	235	236	236	239	240	241	242	243	244	245	245	246	247	248	249	250	251	55
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57	239	240	242	243	244	245	246	247	249	249	250	251	252	253	254	255	256	257	258	259	260	57
58	244	245	246	247	248	249	251	252	253	254	255	256	257	258	259	260	261	262	262	263	264	58
59	248	249	250	251	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	59
60	252	253	254	256	257	258	259	260	261	263	264	265	266	267	268	269	270	271	272	272	273	60

(v.)		Nat. Versines.									
	70°	71°	72°	73°	74°	75°	76°	77°	78°	79°	
0	0657980	0674432	0690983	0707628	0724363	0741181	0758078	0775049	0792088	0809191	0
1	0658253	0674707	0691260	0707906	0724642	0741462	0758360	0775332	0792373	0809477	1
2	58527	74982	91536	08185	24922	41743	58643	75616	92657	09762	2
3	58800	75257	91813	08463	25202	42024	58925	75899	92942	10048	3
4	0659073	0675532	0692090	0708741	0725481	0742305	0759207	0776183	0793227	0810333	4
5	59347	75807	92367	09019	25761	42586	59490	76466	93511	10619	5
6	59620	76083	92643	09298	26041	42867	59772	76750	93796	10905	6
7	0659894	0676358	0692920	0709576	0726321	0743148	0760054	0777033	0794080	0811190	7
8	60167	76633	93197	09854	26600	43429	60337	77371	94365	11476	8
9	60441	76908	93474	10133	26880	43711	60619	77601	94650	11761	9
10	0660715	0677184	0693751	0710411	0727160	0743992	0760902	0777884	0794934	0812047	10
11	60088	77459	94028	10690	27440	44273	61184	78168	95219	12333	11
12	61262	77734	94305	10968	27720	44554	61466	78451	95504	12619	12
13	0661536	0678010	0694582	0711247	0728000	0744835	0761749	0778735	0795789	0812904	13
14	61809	78285	94859	11525	28280	45117	62032	79019	96073	13190	14
15	62083	78560	95136	11804	28560	45398	62314	79303	96358	13476	15
16	0662357	0678836	0695413	0712082	0728839	0745679	0762597	0779586	0796643	0813762	16
17	62631	79111	95690	12361	29119	45961	62879	79870	96928	14048	17
18	62905	79387	95967	12639	29400	46242	63162	80154	97213	14333	18
19	0663179	0679663	0696244	0712918	0729680	0746523	0763444	0780438	0797498	0814619	19
20	63452	79938	96521	13197	29960	46805	63727	80721	97782	14905	20
21	63726	80214	96798	13475	30240	47086	64010	81005	98067	15191	21
22	0664000	0680489	0697076	0713754	0730520	0747368	0764292	0781289	0798352	0815477	22
23	64274	80765	97353	14033	30800	47649	64575	81573	98637	15763	23
24	64548	81041	97630	14312	31080	47931	64858	81857	98922	16049	24
25	0664822	0681316	0697907	0714590	0731360	0748212	0765141	0782141	0799207	0816335	25
26	65097	81592	98185	14869	31641	48494	65423	82425	99492	16620	26
27	65371	81868	98462	15148	31921	48775	65706	82708	99777	16906	27
28	0665645	0682144	0698739	0715427	0732201	0749057	0765989	0782992	0800062	0817192	28
29	65919	82419	99017	15706	32481	49338	66272	83276	100347	17478	29
30	66193	82695	99294	15985	32762	49620	66555	83560	100632	17764	30
31	0666467	0682971	0699572	0716264	0733042	0749902	0766837	0783844	0800917	0818050	31
32	66742	83247	99849	16542	33322	50183	67120	84128	101202	18336	32
33	67016	83523	100127	16821	33603	50465	67403	84412	101487	18623	33
34	0667290	0683799	0700404	0717100	0733883	0750747	0767686	0784696	0801772	0818909	34
35	67564	84075	100682	17379	34163	51028	67969	84981	102057	19195	35
36	67839	84351	100959	17658	34444	51310	68252	85265	102343	19481	36
37	0668113	0684627	0701237	0717938	0734724	0751592	0768535	0785549	0802628	0819767	37
38	68388	84903	101514	18217	35005	51874	68818	85833	102913	20053	38
39	68662	85179	101792	18496	35285	52155	69101	86117	103198	20339	39
40	0668937	0685455	0702070	0718775	0735566	0752437	0769384	0786401	0803483	0820625	40
41	69211	85731	102347	19054	35846	52719	69667	86685	103769	20912	41
42	69486	86007	102625	19333	36127	53001	69950	86970	104054	21198	42
43	0669760	0686284	0702903	0719612	0736407	0753283	0770233	0787254	0804339	0821484	43
44	70035	86560	103181	19892	36688	53565	70516	87538	104624	21770	44
45	70309	86836	103458	20171	36969	53847	70800	87822	104910	22056	45
46	0670584	0687112	0703736	0720450	0737249	0754129	0771083	0788107	0805195	0822343	46
47	70859	87389	104014	20730	37530	54411	71366	88391	105480	22629	47
48	71133	87665	104292	21009	37811	54693	71649	88675	105766	22915	48
49	0671408	0687941	0704570	0721288	0738091	0754975	0771932	0788959	0806051	0823202	49
50	71683	88218	104848	21568	38372	55257	72216	89244	106336	23488	50
51	71958	88494	105126	21847	38653	55539	72499	89528	106622	23774	51
52	0672232	0688771	0705404	0722126	0738934	0755821	0772782	0789813	0806907	0824060	52
53	72507	89047	105682	22406	39215	56103	73065	90097	107193	24347	53
54	72782	89324	105960	22685	39495	56385	73349	90381	107478	24633	54
55	0673057	0689600	0706238	0722965	0739776	0756667	0773632	0790666	0807763	0824920	55
56	73332	89877	106516	23244	40057	56949	73915	90950	108049	25206	56
57	73607	90153	106794	23524	40338	57231	74199	91235	108334	25492	57
58	0673882	0690430	0707072	0723803	0740619	0757514	0774482	0791519	0808620	0825779	58
59	74157	90706	107350	24083	40909	57796	74765	91804	108905	26065	59
60	74432	90983	107628	24363	41181	58078	75049	92088	109191	26352	60

Parts for Seconds.

(v.)

	70°		71°		72°		73°		74°		75°		76°		77°		78°		79°		80°	
"	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	"
1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1
2	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	10	10	10	10	10	2
3	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	3
4	18	18	18	18	18	18	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	4
5	23	23	23	23	23	23	23	23	23	23	23	23	24	24	24	24	24	24	24	24	24	5
6	27	27	27	27	27	27	28	28	28	28	28	28	28	28	28	28	28	28	29	29	29	6
7	32	32	32	32	32	32	32	32	33	33	33	33	33	33	33	33	33	33	33	33	33	7
8	36	37	37	37	37	37	37	37	37	37	37	37	38	38	38	38	38	38	38	38	38	8
9	41	41	41	41	41	42	42	42	42	42	42	42	42	42	43	43	43	43	43	43	43	9
10	46	46	46	46	46	46	46	46	47	47	47	47	47	47	47	47	47	48	48	48	48	10
11	50	50	50	51	51	51	51	51	51	51	52	52	52	52	52	52	52	52	52	52	53	11
12	55	55	55	55	55	55	56	56	56	56	56	56	56	57	57	57	57	57	57	57	57	12
13	59	59	60	60	60	60	60	60	61	61	61	61	61	61	62	62	62	62	62	62	62	13
14	64	64	64	64	65	65	65	65	65	65	66	66	66	66	66	66	66	66	67	67	67	14
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16	73	73	73	74	74	74	74	74	75	75	75	75	75	75	76	76	76	76	76	76	76	16
17	77	77	78	78	78	79	79	79	79	79	80	80	80	80	80	80	81	81	81	81	81	17
18	82	82	83	83	83	83	83	84	84	84	84	84	85	85	85	85	85	86	86	86	86	18
19	87	87	87	87	88	88	88	88	89	89	89	89	89	90	90	90	90	90	90	91	91	19
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23	105	105	105	106	106	106	107	107	107	108	108	108	108	109	109	109	109	109	109	109	110	23
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28	128	128	128	129	129	129	130	130	131	131	131	131	132	132	132	133	133	133	133	133	134	28
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33	150	151	151	152	152	153	153	153	154	154	154	155	155	156	156	156	156	157	157	157	158	33
34	155	155	156	156	157	157	158	158	158	159	159	160	160	160	161	161	161	162	162	162	162	34
35	159	160	160	161	161	162	162	163	163	164	164	164	165	165	165	166	166	166	167	167	167	35
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37	169	169	170	170	171	171	172	172	172	173	173	174	174	174	175	175	175	176	176	176	177	37
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50	228	229	229	230	231	231	232	232	233	234	234	235	235	236	236	237	237	238	238	238	239	50
51	232	233	234	234	235	236	236	237	238	238	239	239	240	240	241	241	242	242	243	243	243	51
52	237	238	238	239	240	240	241	242	242	243	243	244	245	245	246	246	247	247	248	248	248	52
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56	255	256	257	257	258	259	260	260	261	262	262	263	263	264	265	265	266	266	267	267	267	56
57	260	261	261	262	263	264	264	265	266	266	267	268	268	269	270	270	270	271	271	272	272	57
58	264	265	266	267	267	268	269	270	270	271	272	272	273	273	274	275	275	276	276	276	277	58
59	269	270	270	271	272	273	274	274	275	276	276	277	277	278	279	279	280	280	281	281	282	59
60	273	274	275	276	277	277	278	279	280	280	281	282	282	283	283	284	284	285	286	286	286	60

(v.)		Nat. Versines.									
	80°	81°	82°	83°	84°	85°	86°	87°	88°	89°	
0	0826352	0843565	0860827	0878131	0895471	0912844	0930243	0947664	0965100	0982548	0
1	0826638	0843853	0861115	0878419	0895761	0913134	0930534	0947954	0965391	0982838	1
2	26925	44140	61403	78708	96050	13424	30824	48245	65682	83129	2
3	27211	44427	61691	78997	96339	13714	31114	48535	65973	83420	3
4	0827498	0844715	0861979	0879286	0896629	0914003	0931404	0948826	0966263	0983711	4
5	27784	45002	62267	79574	96918	14293	31694	49116	66554	84002	5
6	28071	45290	62555	79863	97207	14583	31985	49407	66845	84293	6
7	0828357	0845577	0862844	0880152	0897497	0914873	0932275	0949698	0967136	0984583	7
8	28644	45864	63132	80441	97786	15163	32565	49988	67426	84874	8
9	28931	46152	63420	80730	98075	15453	32855	50279	67717	85165	9
10	0829217	0846439	0863708	0881018	0898365	0915742	0933146	0950569	0968008	0985456	10
11	29504	46727	63996	81307	98654	16032	33436	50860	68298	85747	11
12	29790	47014	64284	81596	98944	16322	33726	51150	68589	86038	12
13	0830077	0847302	0864573	0881885	0899233	0916612	0934016	0951441	0968880	0986329	13
14	30364	47589	64861	82174	99522	16902	34307	51731	69171	86619	14
15	30650	47877	65149	82463	99812	17192	34597	52022	69461	86910	15
16	0830937	0848164	0865437	0882751	0900101	0917482	0934887	0952312	0969752	0987201	16
17	31224	48452	65726	83040	00391	17772	35177	52603	70043	87492	17
18	31511	48739	66014	83329	00680	18061	35468	52893	70334	87783	18
19	0831797	0849027	0866302	0883618	0900970	0918351	0935758	0953184	0970624	0988074	19
20	32084	49314	66590	83907	01259	18641	36048	53475	70915	88365	20
21	32371	49602	66879	84196	01549	18931	36339	53765	71206	88656	21
22	0832658	0849889	0867167	0884485	0901838	0919221	0936629	0954056	0971497	0988946	22
23	32944	50177	67455	84774	02128	19511	36919	54346	71788	89237	23
24	33231	50465	67744	85063	02417	19801	37209	54637	72078	89528	24
25	0833518	0850752	0868032	0885352	0902707	0920091	0937500	0954928	0972369	0989819	25
26	33805	51040	68320	85641	02996	20381	37790	55218	72660	90110	26
27	34092	51328	68609	85930	03286	20671	38080	55509	72951	90401	27
28	0834379	0851615	0868897	0886219	0903575	0920961	0938371	0955799	0973241	0990692	28
29	34665	51903	69185	86508	03865	21251	38661	56090	73532	90983	29
30	34952	52191	69474	86797	04154	21541	38951	56381	73823	91273	30
31	0835239	0852478	0869762	0887086	0904444	0921831	0939242	0956671	0974114	0991564	31
32	35526	52766	70051	87375	04733	22121	39532	56962	74405	91855	32
33	35813	53054	70339	87664	05023	22411	39822	57252	74695	92146	33
34	0836100	0853341	0870627	0887953	0905312	0922701	0940113	0957543	0974986	0992437	34
35	36387	53629	70916	88242	05602	22991	40403	57834	75277	92728	35
36	36674	53917	71204	88531	05892	23281	40694	58124	75568	93019	36
37	0836961	0854205	0871493	0888820	0906181	0923571	0940984	0958415	0975859	0993310	37
38	37248	54492	71781	89109	06471	23861	41274	58706	76149	93600	38
39	37535	54780	72070	89398	06760	24151	41565	58996	76440	93891	39
40	0837822	0855068	0872358	0889687	0907050	0924441	0941855	0959287	0976731	0994182	40
41	38109	55356	72647	89977	07340	24731	42146	59578	77022	94473	41
42	38396	55644	72935	90266	07629	25021	42436	59868	77313	94764	42
43	0838683	0855932	0873224	0890555	0907919	0925311	0942726	0960159	0977603	0995055	43
44	38970	56219	73512	90844	08209	25601	43017	60449	77894	95346	44
45	39257	56507	73801	91133	08498	25891	43307	60740	78185	95637	45
46	0839544	0856795	0874090	0891422	0908788	0926182	0943598	0961031	0978476	0995928	46
47	39832	57083	74378	91711	09078	26472	43888	61321	78767	96218	47
48	40119	57371	74667	92001	09367	26762	44178	61612	79058	96509	48
49	0840406	0857659	0874955	0892290	0909657	0927052	0944469	0961903	0979348	0996800	49
50	40693	57947	75244	92579	09947	27342	44759	62193	79639	97091	50
51	40980	58235	75533	92868	10236	27632	45050	62484	79930	97382	51
52	0841267	0858523	0875821	0893157	0910526	0927922	0945340	0962775	0980221	0997673	52
53	41555	58811	76110	93447	10816	28212	45631	63066	80512	97964	53
54	41842	59099	76398	93736	11106	28503	45921	63356	80803	98255	54
55	0842129	0859387	0876687	0894025	0911395	0928793	0946212	0963647	0981093	0998546	55
56	42416	59675	76976	94314	11685	29083	46502	63938	81384	98836	56
57	42704	59963	77264	94604	11975	29373	46793	64228	81675	99127	57
58	0842991	0860251	0877553	0894893	0912265	0929663	0947083	0964519	0981966	0999418	58
59	43278	60539	77842	95182	12554	29953	47374	64810	82257	99709	59
60	43565	60827	78131	95471	12844	30243	47664	65100	82548	1000000	60

Parts for Seconds.

(v.)

	80°		81°		82°		83°		84°		85°		86°		87°		88°		89°		90°	
"	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'
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3	14	14	14	14	14	14	14	14	14	14	14	14	15	15	15	15	15	15	15	15	15	3
4	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	4
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9	43	43	43	43	43	43	43	43	43	43	43	43	44	44	44	44	44	44	44	44	44	9
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17	81	81	81	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	17
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19	91	91	91	91	91	91	91	91	92	92	92	92	92	92	92	92	92	92	92	92	92	19
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43	206	206	206	206	206	207	207	207	207	208	208	208	208	208	208	208	208	208	208	208	208	43
44	210	210	211	211	211	211	212	212	212	212	212	212	213	213	213	213	213	213	213	213	213	44
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46	220	220	220	221	221	221	221	222	222	222	222	222	222	223	223	223	223	223	223	223	223	46
47	224	225	225	225	226	226	226	226	227	227	227	227	227	227	228	228	228	228	228	228	228	47
48	229	230	230	230	230	231	231	231	231	232	232	232	232	232	232	232	233	233	233	233	233	48
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53	253	253	254	254	254	255	255	255	255	256	256	256	256	256	257	257	257	257	257	257	257	53
54	258	258	259	259	259	260	260	260	260	261	261	261	261	261	261	262	262	262	262	262	262	54
55	263	263	263	264	264	264	265	265	265	266	266	266	266	266	266	266	266	267	267	267	267	55
56	267	268	268	268	269	269	269	270	270	270	270	271	271	271	271	271	271	271	271	271	272	56
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58	277	277	278	278	278	279	279	279	280	280	280	280	280	281	281	281	281	281	281	281	281	58
59	282	282	283	283	283	284	284	284	284	285	285	285	285	286	286	286	286	286	286	286	286	59
60	286	287	287	288	288	288	289	289	289	290	290	290	290	290	290	290	291	291	291	291	291	60

Nat. Versines.

(v.)

	90°	91°	92°	93°	94°	95°	96°	97°	98°	99°	
0	1000000	1017452	1034900	1052336	1069757	1087156	1104529	1121869	1139173	1156435	0
1	1000291	1017743	1035190	1052626	1070047	1087446	1104818	1122158	1139461	1156722	1
2	00582	18034	35481	52917	70337	87735	05107	22447	39749	57009	2
3	00873	18325	35772	53207	70627	88025	05396	22736	40037	57296	3
4	1001164	1018616	1036062	1053498	1070917	1088315	1105686	1123024	1140325	1157584	4
5	01454	18907	36353	53788	71207	88605	05975	23313	40613	57871	5
6	01745	19197	36644	54079	71497	88894	06264	23602	40901	58158	6
7	1002036	1019488	1036934	1054369	1071788	1089184	1106553	1123890	1141189	1158445	7
8	02327	19779	37225	54660	72078	89474	06843	24179	41477	58733	8
9	02618	20070	37516	54950	72368	89764	07132	24467	41765	59020	9
10	1002909	1020361	1037807	1055241	1072658	1090053	1107421	1124756	1142053	1159307	10
11	03200	20652	38097	55531	72948	90343	07710	25045	42341	59594	11
12	03491	20942	38388	55822	73238	90633	07999	25333	42629	59881	12
13	1003781	1021233	1038679	1056112	1073528	1090922	1108289	1125622	1142917	1160168	13
14	04072	21524	38969	56402	73818	91212	08578	25910	43205	60456	14
15	04363	21815	39260	56693	74109	91502	08867	26199	43493	60743	15
16	1004654	1022106	1039551	1056983	1074399	1091791	1109156	1126488	1143781	1161030	16
17	04945	22397	39841	57274	74689	92081	09445	26776	44068	61317	17
18	05236	22687	40132	57564	74979	92371	09734	27065	44356	61604	18
19	1005527	1022978	1040422	1057854	1075269	1092660	1110023	1127353	1144644	1161891	19
20	05818	23209	40713	58145	75559	92950	10313	27642	44932	62178	20
21	06109	23560	41004	58435	75849	93240	10602	27930	45220	62465	21
22	1006400	1023851	1041294	1058726	1076139	1093529	1110891	1128219	1145508	1162752	22
23	06690	24141	41585	59016	76429	93819	11180	28507	45795	63039	23
24	06981	24432	41876	59306	76719	94108	11469	28796	46083	63326	24
25	1007272	1024723	1042166	1059597	1077009	1094398	1111758	1129084	1146371	1163613	25
26	07563	25014	42457	59887	77299	94688	12047	29373	46659	63900	26
27	07854	25305	42748	60178	77589	94977	12336	29661	46946	64187	27
28	1008145	1025595	1043038	1060468	1077879	1095267	1112625	1129949	1147234	1164474	28
29	08436	25886	43329	60758	78169	95556	12914	30238	47522	64761	29
30	08727	26177	43619	61049	78459	95846	13203	30526	47809	65048	30
31	1009017	1026468	1043910	1061339	1078749	1096135	1113492	1130815	1148097	1165335	31
32	09308	26759	44201	61629	79039	96425	13781	31103	48385	65621	32
33	09599	27049	44491	61920	79329	96714	14070	31391	48672	65908	33
34	1009890	1027340	1044782	1062210	1079619	1097004	1114359	1131680	1148960	1166195	34
35	10181	27631	45072	62500	79909	97293	14648	31968	49248	66482	35
36	10472	27922	45363	62791	80199	97583	14937	32256	49535	66769	36
37	1010763	1028212	1045654	1063081	1080489	1097872	1115226	1132545	1149823	1167056	37
38	11054	28503	45944	63371	80779	98162	15515	32833	50111	67342	38
39	11344	28794	46235	63661	81069	98451	15804	33121	50398	67629	39
40	1011635	1029085	1046525	1063952	1081359	1098741	1116093	1133410	1150686	1167916	40
41	11926	29376	46816	64242	81649	99030	16382	33698	50973	68203	41
42	12217	29666	47107	64532	81939	99320	16671	33986	51261	68489	42
43	1012508	1029957	1047397	1064823	1082228	1099609	1116960	1134274	1151548	1168776	43
44	12799	30248	47688	65113	82518	99899	17249	34563	51836	69063	44
45	13090	30539	47978	65403	82808	100188	17537	34851	52123	69350	45
46	1013381	1030829	1048269	1065693	1083098	1100478	1117826	1135139	1152411	1169636	46
47	13671	31120	48559	65984	83388	100767	18115	35427	52698	69923	47
48	13962	31411	48850	66274	83678	101056	18404	35716	52986	70210	48
49	1014253	1031702	1049140	1066564	1083968	1101346	1118693	1136004	1153273	1170496	49
50	14544	31992	49431	66854	84258	101635	18982	36292	53561	70783	50
51	14835	32283	49721	67145	84547	101925	19270	36580	53848	71069	51
52	1015126	1032574	1050012	1067435	1084837	1102214	1119559	1136868	1154136	1171356	52
53	15417	32864	50302	67725	85127	102503	19848	37156	54423	71643	53
54	15707	33155	50593	68015	85417	102793	20137	37445	54710	71929	54
55	1015998	1033446	1050884	1068306	1085707	1103082	1120436	1137733	1154998	1172216	55
56	16289	33737	51174	68596	85997	103371	20714	38021	55285	72502	56
57	16580	34027	51465	68886	86286	103661	21003	38309	55573	72789	57
58	1016871	1034318	1051755	1069176	1086576	1103950	1121292	1138597	1155860	1173075	58
59	17162	34609	52046	69466	86866	104239	21581	38885	56147	73362	59
60	17452	34900	52336	69757	87156	104529	21869	39173	56435	73648	60

Parts for Seconds.

(v.)

	90°		91°		92°		93°		94°		95°		96°		97°		98°		99°		100°	
"	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	"
1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1
2	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	2
3	15	15	15	15	15	15	15	15	15	14	14	14	14	14	14	14	14	14	14	14	14	3
4	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	4
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6	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	6
7	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	33	33	7
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9	44	44	44	44	44	44	44	44	44	43	43	43	43	43	43	43	43	43	43	43	43	9
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11	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	11
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14	68	68	68	68	68	68	68	68	68	68	68	68	68	67	67	67	67	67	67	67	67	14
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17	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	82	81	81	81	17
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21	102	102	102	102	102	102	102	102	102	101	101	101	101	101	101	101	101	101	101	100	100	21
22	107	107	107	107	107	106	106	106	106	106	106	106	106	106	106	106	105	105	105	105	105	22
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24	116	116	116	116	116	116	116	116	116	116	116	116	116	115	115	115	115	115	115	115	115	24
25	121	121	121	121	121	121	121	121	121	121	121	121	121	120	120	120	120	120	120	119	119	25
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28	136	136	136	136	136	136	136	135	135	135	135	135	135	135	135	135	134	134	134	134	134	28
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36	175	175	174	174	174	174	174	174	174	174	174	174	173	173	173	173	173	173	172	172	172	36
37	179	179	179	179	179	179	179	179	179	179	179	179	178	178	178	178	178	177	177	177	177	37
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47	228	228	228	228	228	228	228	227	227	227	227	227	227	226	226	226	226	225	225	225	224	47
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49	238	238	237	237	237	237	237	237	237	237	236	236	236	236	235	235	235	235	234	234	234	49
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(r.)	Nat. Versines.										
	100°	101°	102°	103°	104°	105°	106°	107°	108°	109°	
0	1173648	1190509	1207912	1224951	1241922	1258819	1275637	1292372	1309017	1325568	0
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2	74221	91380	08481	25518	42486	59381	76197	92928	09570	26118	2
3	74508	91666	08765	25801	42769	59662	76476	93206	09847	26393	3
4	1174794	1191951	1209050	1226085	1243051	1259943	1276756	1293484	1310123	1326668	4
5	75080	92237	09334	26368	43333	60224	77035	93762	10400	26943	5
6	75367	92622	09619	26651	43615	60505	77315	94040	10676	27218	6
7	1175653	1192807	1209903	1226935	1243897	1260785	1277594	1294318	1310953	1327493	7
8	75940	93093	10187	27218	44179	61066	77874	94596	11229	27768	8
9	76226	93378	10472	27501	44461	61347	78153	94874	11506	28042	9
10	1176512	1193664	1210756	1227784	1244743	1261628	1278432	1295152	1311782	1328317	10
11	76798	93949	11041	28068	45025	61909	78712	95430	12059	28592	11
12	77085	94234	11325	28351	45307	62189	78991	95708	12335	28867	12
13	1177371	1194520	1211609	1228634	1245589	1262470	1279270	1295986	1312611	1329141	13
14	77657	94805	11893	28917	45871	62751	79550	96264	12888	29416	14
15	77944	95090	12178	29200	46153	63031	79829	96542	13164	29691	15
16	1178230	1195376	1212462	1229484	1246435	1263312	1280108	1296819	1313440	1329965	16
17	78516	95661	12746	29767	46717	63593	80388	97097	13716	30240	17
18	78802	95946	13030	30050	46999	63873	80667	97375	13993	30514	18
19	1179008	1196231	1213315	1230333	1247281	1264154	1280946	1297653	1314269	1330789	19
20	79375	96517	13599	30616	47563	64434	81225	97930	14545	31063	20
21	79661	96802	13883	30899	47845	64715	81504	98208	14821	31338	21
22	1179947	1197087	1214167	1231182	1248126	1264995	1281783	1298486	1315097	1331612	22
23	80233	97372	14451	31465	48408	65276	82062	98763	15373	31887	23
24	80519	97657	14735	31748	48690	65556	82342	99041	15649	32161	24
25	1180805	1197943	1215019	1232031	1248972	1265837	1282621	1299318	1315925	1332436	25
26	81091	98228	15304	32314	49253	66117	82900	99596	16201	32710	26
27	81377	98513	15588	32597	49535	66397	83179	99873	16477	32984	27
28	1181664	1198798	1215872	1232880	1249817	1266678	1283458	1300151	1316753	1333258	28
29	81950	99083	16156	33163	50098	66958	83736	100428	17029	33533	29
30	82236	99368	16440	33445	50380	67238	84015	100706	17305	33807	30
31	1182522	1199653	1216724	1233728	1250662	1267519	1284294	1300983	1317581	1334081	31
32	82808	99938	17008	34011	50943	67799	84573	101261	17856	34355	32
33	83094	100223	17292	34294	51225	68079	84852	101538	18132	34629	33
34	1183380	1200508	1217575	1234577	1251506	1268359	1285131	1301815	1318408	1334903	34
35	83665	00793	17859	34859	51788	68640	85410	102093	18684	35178	35
36	83951	01078	18143	35142	52069	68920	85688	102370	18959	35452	36
37	1184237	1201363	1218427	1235425	1252351	1269200	1285967	1302647	1319235	1335726	37
38	84523	01648	18711	35708	52632	69480	86246	102924	19511	36000	38
39	84809	01933	18995	35990	52914	69760	86525	103202	19786	36274	39
40	1185095	1202218	1219279	1236273	1253195	1270040	1286803	1303479	1320062	1336548	40
41	85381	02502	19562	36556	53477	70320	87082	103756	20337	36821	41
42	85667	02787	19846	36838	53758	70600	87361	104033	20613	37095	42
43	1185952	1203072	1220130	1237121	1254039	1270881	1287639	1304310	1320889	1337369	43
44	86238	03357	20414	37403	54321	71161	87918	104587	21164	37643	44
45	86524	03642	20697	37686	54602	71440	88196	104864	21440	37917	45
46	1186810	1203927	1220981	1237968	1254883	1271720	1288475	1305141	1321715	1338191	46
47	87096	04211	21265	38251	55165	72000	88753	105418	21990	38464	47
48	87381	04496	21549	38534	55446	72280	89032	105695	22266	38738	48
49	1187667	1204781	1221832	1238816	1255727	1272560	1289310	1305972	1322541	1339012	49
50	87953	05066	22116	39098	56008	72840	89589	106249	22816	39265	50
51	88239	05350	22399	39381	56289	73120	89867	106526	23092	39539	51
52	1188524	1205635	1222683	1239663	1256571	1273400	1290146	1306803	1323367	1339833	52
53	88810	05920	22967	39946	56852	73679	90424	107080	23642	40106	53
54	89095	06204	23250	40228	57133	73959	90702	107357	23917	40380	54
55	1189381	1206489	1223534	1240510	1257414	1274239	1290981	1307633	1324193	1340653	55
56	89667	06773	23817	40793	57695	74519	91259	107910	24468	40927	56
57	89952	07058	24101	41075	57976	74798	91537	108187	24743	41200	57
58	1190238	1207343	1224384	1241357	1258257	1275078	1291815	1308464	1325018	1341473	58
59	90523	07627	24668	41640	58538	75358	92094	108740	25293	41747	59
60	90809	07912	24951	41922	58819	75637	92372	109017	25568	42020	60

Parts for Seconds.

(v.)

	100°		101°		102°		103°		104°		105°		106°		107°		108°		109°		110°	
"	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	"
1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1
2	10	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	2
3	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	3
4	19	19	19	19	19	19	19	19	19	19	19	19	19	19	18	18	18	18	18	18	18	4
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7	33	33	33	33	33	33	33	33	33	33	33	33	33	32	32	32	32	32	32	32	32	7
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9	43	43	43	43	43	43	43	42	42	42	42	42	42	42	42	41	41	41	41	41	41	9
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15	72	71	71	71	71	71	71	71	71	70	70	70	70	70	69	69	69	69	69	69	69	15
16	76	76	76	76	76	76	75	75	75	75	75	75	74	74	74	74	74	73	73	73	73	16
17	81	81	81	81	81	80	80	80	80	80	80	79	79	79	79	79	78	78	78	78	77	17
18	86	86	86	86	85	85	85	85	85	84	84	84	84	83	83	83	83	83	82	82	82	18
19	91	91	90	90	90	90	90	90	89	89	89	89	88	88	88	88	87	87	87	87	87	19
20	95	95	95	95	95	94	94	94	94	94	93	93	93	93	92	92	92	92	91	91	91	20
21	100	100	100	100	100	99	99	99	99	98	98	98	98	97	97	97	97	96	96	96	96	21
22	105	105	105	105	104	104	104	103	103	103	103	102	102	102	101	101	101	101	101	100	100	22
23	110	110	109	109	109	109	108	108	108	108	107	107	107	107	106	106	106	105	105	105	105	23
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25	119	119	119	119	119	118	118	118	118	117	117	117	116	116	116	115	115	115	114	114	114	25
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28	134	133	133	133	133	132	132	132	131	131	131	131	130	130	129	129	129	128	128	128	128	28
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31	148	148	148	147	147	147	146	146	146	145	145	145	144	144	144	143	143	143	142	142	141	31
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58	277	276	276	276	275	275	274	273	273	272	272	271	270	270	269	268	267	267	266	265	264	58
59	282	281	281	280	280	279	279	278	277	277	276	276	275	274	274	273	272	271	270	270	269	59
60	286	286	286	285	284	284	283	283	282	282	281	280	280	279	278	277	277	276	275	274	273	60

(v.)

Nat. Versines.

	110°	111°	112°	113°	114°	115°	116°	117°	118°	119°	
0	1342020	1358368	1374607	1390731	1406737	1422618	1438371	1453991	1469472	1484810	0
1	1342294	1358640	1374876	1390999	1407002	1422882	1438633	1454250	1469728	1485064	1
2	42567	58911	75146	91267	107268	23146	38894	54509	69085	85318	2
3	42840	59183	75416	91534	107534	23409	39155	54768	70242	85573	3
4	1343113	1359454	1375685	1391802	1407799	1423673	1439417	1455027	1470499	1485827	4
5	43387	59725	75955	92070	108065	23936	39678	55286	70755	86081	5
6	43660	59997	76224	92337	108331	24199	39939	55545	71012	86335	6
7	1343933	1360268	1376494	1392605	1408596	1424463	1440200	1455804	1471269	1486590	7
8	44206	60540	76763	92872	108862	24726	40462	56063	71525	86844	8
9	44479	60811	77033	93140	109127	24990	40723	56322	71782	87098	9
10	1344752	1361082	1377302	1393407	1409392	1425253	1440984	1456580	1472038	1487352	10
11	45025	61353	77571	93675	109658	25516	41245	56839	72294	87606	11
12	45298	61625	77841	93942	109923	25779	41506	57098	72551	87860	12
13	1345571	1361896	1378110	1394209	1410188	1426043	1441767	1457357	1472807	1488114	13
14	45844	62167	78379	94477	10454	26306	42028	57615	73063	88367	14
15	46117	62438	78649	94744	10719	26569	42289	57874	73320	88621	15
16	1346390	1362709	1378918	1395011	1410984	1426832	1442550	1458133	1473576	1488875	16
17	46663	62980	79187	95278	11249	27095	42810	58391	73832	89129	17
18	46936	63251	79456	95546	11514	27358	43071	58650	74088	89383	18
19	1347209	1363522	1379725	1395813	1411780	1427621	1443332	1458908	1474344	1489636	19
20	47481	63793	79994	96080	12045	27884	43593	59167	74600	89890	20
21	47754	64064	80263	96347	12310	28147	43853	59425	74856	90143	21
22	1348027	1364335	1380532	1396614	1412575	1428410	1444114	1459683	1475112	1490397	22
23	48299	64696	80801	96881	12840	28672	44375	59942	75368	90650	23
24	48572	64877	81070	97148	13104	28935	44635	60200	75624	90904	24
25	1348845	1365148	1381339	1397415	1413369	1429198	1444896	1460458	1475880	1491157	25
26	49117	65418	81608	97682	13634	29461	45156	60716	76136	91411	26
27	49390	65689	81877	97949	13899	29723	45417	60974	76392	91664	27
28	1349662	1365960	1382146	1398216	1414164	1429986	1445677	1461233	1476647	1491917	28
29	49935	66231	82415	98482	14429	30249	45938	61491	76903	92170	29
30	50207	66501	82683	98749	14693	30511	46198	61749	77159	92424	30
31	1350480	1366772	1382952	1399016	1414958	1430774	1446458	1462007	1477414	1492677	31
32	50752	67043	83221	99283	15223	31036	46718	62265	77670	92930	32
33	51025	67313	83490	99549	15487	31299	46979	62523	77926	93183	33
34	1351297	1367584	1383758	1399816	1415752	1431561	1447239	1462780	1478181	1493436	34
35	51569	67854	84027	100083	16016	31823	47489	63038	78436	93689	35
36	51842	68125	84295	100349	16281	32086	47759	63296	78692	93942	36
37	1352114	1368395	1384564	1400616	1416545	1432348	1448019	1463554	1478947	1494195	37
38	52386	68665	84832	100882	16810	32610	48279	63812	79203	94448	38
39	52658	68936	85101	101149	17074	32873	48539	64069	79458	94701	39
40	1352931	1369206	1385369	1401415	1417339	1433135	1448799	1464327	1479713	1494953	40
41	53203	69477	85638	101681	17603	33397	49059	64585	79968	95206	41
42	53475	69747	85906	101948	17867	33659	49319	64842	80224	95459	42
43	1353747	1370017	1386174	1402214	1418131	1433921	1449579	1465100	1480479	1495711	43
44	54019	70287	86443	102480	18396	34183	49839	65357	80734	95964	44
45	54291	70557	86711	102747	18660	34445	50098	65615	80989	96217	45
46	1354563	1370828	1386979	1403013	1418924	1434707	1450358	1465872	1481244	1496469	46
47	54835	71098	87247	103279	19188	34969	50618	66129	81499	96722	47
48	55107	71368	87516	103545	19452	35231	50878	66387	81754	96974	48
49	1355379	1371638	1387784	1403811	1419716	1435493	1451137	1466644	1482009	1497226	49
50	55651	71908	88052	104078	19980	35755	51397	66901	82263	97479	50
51	55923	72178	88320	104344	20244	36017	51656	67158	82518	97731	51
52	1356194	1372448	1388588	1404610	1420508	1436278	1451916	1467416	1482773	1497983	52
53	56466	72718	88856	104876	20772	36540	52175	67673	83028	98236	53
54	56738	72988	89124	105142	21036	36802	52435	67930	83282	98488	54
55	1357010	1373258	1389392	1405408	1421300	1437063	1452694	1468187	1483537	1498740	55
56	57281	73528	89660	105673	21563	37325	52954	68444	83792	98992	56
57	57553	73797	89928	105939	21827	37587	53213	68701	84046	99244	57
58	1357825	1374067	1390196	1406205	1422091	1437848	1453472	1468958	1484301	1499496	58
59	58096	74337	90463	106471	22355	38110	53731	69215	84555	99748	59
60	58368	74607	90731	106737	22618	38371	53991	69472	84810	100000	60

Parts for Seconds.

(v.)

	110°		111°		112°		113°		114°		115°		116°		117°		118°		119°		120°	
"	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	"
1	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	1
2	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	8	8	8	2
3	14	14	14	14	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	3
4	18	18	18	18	18	18	18	18	18	18	18	17	17	17	17	17	17	17	17	17	17	4
5	23	23	23	23	22	22	22	22	22	22	22	22	22	22	21	21	21	21	21	21	21	5
6	27	27	27	27	27	27	27	27	27	26	26	26	26	26	26	26	26	25	25	25	25	6
7	32	32	32	32	31	31	31	31	31	31	31	31	30	30	30	30	30	30	30	30	29	7
8	36	36	36	36	36	36	36	36	35	35	35	35	35	35	34	34	34	34	34	34	34	8
9	41	41	41	41	40	40	40	40	40	40	39	39	39	39	39	39	38	38	38	38	38	9
10	46	45	45	45	45	45	45	44	44	44	44	44	43	43	43	43	43	42	42	42	42	10
11	50	50	50	50	49	49	49	49	49	49	48	48	48	48	47	47	47	47	46	46	46	11
12	55	54	54	54	54	54	53	53	53	53	53	53	52	52	52	52	51	51	51	51	50	12
13	59	59	59	59	58	58	58	58	58	57	57	57	57	56	56	56	56	55	55	55	55	13
14	64	64	63	63	63	63	62	62	62	62	61	61	61	60	60	60	60	59	59	59	59	14
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16	73	73	72	72	72	72	71	71	71	71	70	70	70	69	69	69	68	68	68	68	67	16
17	77	77	77	77	76	76	76	76	75	75	75	74	74	74	73	73	73	72	72	72	71	17
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19	87	86	86	86	85	85	85	84	84	84	83	83	83	82	82	82	81	81	81	80	80	19
20	91	91	91	90	90	90	89	89	89	88	88	88	87	87	86	86	86	85	85	84	84	20
21	96	95	95	95	94	94	94	93	93	93	92	92	92	91	91	90	90	89	89	89	88	21
22	100	100	100	99	99	99	98	98	97	97	97	96	96	95	95	95	94	94	93	93	92	22
23	105	104	104	104	103	103	103	102	102	101	101	101	100	100	99	99	98	98	98	97	97	23
24	109	109	109	108	108	107	107	107	106	106	105	105	105	104	104	103	103	102	102	101	101	24
25	114	114	113	113	112	112	111	111	111	110	110	109	109	108	108	107	107	107	106	105	105	25
26	118	118	118	117	117	116	116	116	115	115	114	114	113	113	112	112	111	111	110	110	109	26
27	123	123	122	122	121	121	121	120	120	119	119	118	118	117	117	116	116	115	114	114	113	27
28	128	127	127	126	126	125	125	124	124	124	123	123	122	121	121	120	120	119	119	118	118	28
29	132	132	131	131	130	130	130	129	128	128	127	127	126	126	125	125	124	124	123	122	122	29
30	137	136	136	135	135	134	134	133	133	132	132	131	131	130	130	129	128	128	127	127	126	30
31	141	141	140	140	139	139	138	138	137	137	136	136	135	134	134	133	133	132	131	131	130	31
32	146	145	145	144	144	143	143	142	142	141	141	140	139	139	138	138	137	136	136	135	134	32
33	150	150	149	149	148	148	147	147	146	146	145	144	144	143	143	142	141	141	140	139	139	33
34	155	154	154	153	153	152	152	151	151	150	149	149	148	148	147	146	146	145	144	143	143	34
35	159	159	158	158	157	157	156	156	155	154	154	153	153	152	151	150	150	150	148	148	147	35
36	164	163	163	162	162	161	161	160	159	159	158	158	157	156	156	155	154	153	153	152	151	36
37	169	168	167	167	166	166	165	164	164	163	163	162	161	161	160	159	158	158	157	156	155	37
38	173	173	172	171	171	170	169	168	168	167	166	166	165	164	163	163	162	161	160	160	160	38
39	178	177	177	176	175	175	174	173	173	172	171	171	170	169	168	168	167	166	165	165	164	39
40	182	182	181	180	180	179	179	178	177	176	176	175	174	174	173	172	171	170	170	169	168	40
41	187	186	186	185	184	184	183	182	182	181	180	179	179	178	177	176	176	175	174	173	172	41
42	191	191	190	189	189	188	187	186	186	185	185	184	183	182	181	181	180	179	178	177	176	42
43	196	195	195	194	193	193	192	191	190	190	189	188	187	187	186	185	184	183	182	181	181	43
44	200	200	199	198	198	197	197	196	195	194	193	193	192	191	190	189	188	187	187	186	185	44
45	205	204	204	203	202	201	201	200	199	199	198	197	196	195	194	193	193	192	191	190	189	45
46	210	209	208	207	207	206	205	205	204	203	202	201	200	200	199	198	197	196	195	194	193	46
47	214	213	213	212	211	211	210	209	208	207	207	206	205	204	203	202	201	200	199	198	197	47
48	219	218	217	217	216	215	214	213	213	212	211	210	209	208	207	206	205	205	204	203	202	48
49	223	222	222	221	220	220	219	218	217	216	215	214	214	213	212	211	210	209	208	207	206	49
50	228	227	226	226	225	224	223	222	221	220	219	218	217	216	215	214	213	212	211	210	210	50
51	232	232	231	230	229	228	228	227	226	225	224	223	222	221	220	219	218	217	216	215	214	51
52	237	236	235	235	234	233	232	231	230	229	228	228	227	226	225	224	223	221	220	219	218	52
53	241	241	240	239	238	237	237	236	235	234	233	232	231	230	229	228	227	226	225	224	223	53
54	246	245	244	244	243	242	241	240	239	238	237	236	235	234	233	232	231	230	229	228	227	54
55	251	250	249	248	247	246	245	245	244	243	242	241	240	239	238	236	235	234	233	232	231	55
56	255	254	253	253	252	251	250	249	248	247	246	245	244	243	242	241	240	239	237	236	235	56
57	260	259	258	257	256	255	254	253	252	251	250	249	249	247	246	245	244	243	242	240	239	57
58	264	263	262	262	261	260	259	258	257	256	255	254	253	252	251	249	248	247	246	245	244	58
59	269	268	267	266	265	264	263	262	261	260	259	258	257	256	255	254	253	251	250	249	248	59
60	273	272	272	271	270	269	268	267	266	265	264	263	261	260	259	258	257	256	254	253	252	60

(v.)		Nat. Versines.									
	120°	121°	122°	123°	124°	125°	126°	127°	128°	129°	
0	1500000	1515038	1529919	1544639	1559193	1573576	1587785	1601815	1615662	1629320	0
1	1500252	1515287	1530166	1544883	1559434	1573815	1588021	1602047	1615891	1629546	1
2	00304	15537	30413	45127	59675	74053	88256	02280	16120	29772	2
3	00756	15786	30659	45371	59916	74291	88491	02512	16349	29998	3
4	1501007	1516035	1530906	1545615	1560157	1574529	1588726	1602744	1616578	1630224	4
5	01259	16284	31152	45858	60398	74767	88961	02976	16307	30450	5
6	01511	16533	31399	46102	60639	75005	89196	03208	17036	30676	6
7	1501762	1516782	1531615	1546346	1560880	1575243	1589431	1603440	1617265	1630902	7
8	02014	17031	31891	46589	61121	75481	89666	03672	17494	31127	8
9	02266	17280	32138	46833	61361	75719	89901	03904	17722	31353	9
10	1502517	1517529	1532384	1547076	1561602	1575957	1590136	1604136	1617951	1631578	10
11	02769	17778	32630	47320	61843	76195	90371	04367	18180	31804	11
12	03020	18027	32876	47563	62083	76432	90606	04599	18408	32029	12
13	1503271	1518276	1533122	1547807	1562324	1576670	1590840	1604831	1618637	1632255	13
14	03523	18525	33369	48050	62565	76908	91075	05062	18865	32480	14
15	03774	18773	33615	48293	62805	77145	91310	05294	19094	32705	15
16	1504025	1519022	1533861	1548537	1563045	1577383	1591544	1605526	1619322	1632931	16
17	04277	19271	34107	48780	63286	77620	91779	05757	19551	33156	17
18	04528	19519	34352	49023	63526	77858	92013	05988	19779	33381	18
19	1504779	1519768	1534598	1549266	1563766	1578095	1592248	1606220	1620007	1633606	19
20	05030	20016	34844	49509	64007	78332	92482	06451	20236	33831	20
21	05281	20265	35090	49752	64247	78570	92716	06682	20464	34056	21
22	1505532	1520513	1535336	1549995	1564487	1578807	1592951	1606914	1620692	1634281	22
23	05783	20761	35581	50238	64727	79044	93185	07145	20920	34506	23
24	06034	21010	35827	50481	64967	79281	93419	07376	21148	34731	24
25	1506285	1521258	1536072	1550724	1565207	1579518	1593653	1607607	1621376	1634955	25
26	06536	21506	36318	50966	65447	79755	93887	07538	21604	35180	26
27	06786	21754	36563	51209	65687	79992	94121	08069	21831	35405	27
28	1507037	1522002	1536809	1551452	1565927	1580229	1594355	1608300	1622059	1635629	28
29	07288	22251	37054	51694	66167	80466	94589	08531	22287	35854	29
30	07538	22499	37300	51937	66406	80703	94823	08761	22515	36078	30
31	1507789	1522747	1537545	1552180	1566646	1580940	1595057	1608992	1622742	1636503	31
32	08040	22995	37790	52422	66886	81177	95290	09223	22970	36527	32
33	08290	23242	38035	52665	67125	81413	95524	09454	23197	36751	33
34	1508541	1523490	1538281	1552907	1567365	1581650	1595758	1609684	1623425	1636976	34
35	08791	23738	38526	53149	67604	81886	95991	09915	23652	37200	35
36	09041	23986	38771	53392	67844	82123	96225	10145	23880	37424	36
37	1509292	1524234	1539016	1553684	1568083	1582360	1596458	1610376	1624107	1637648	37
38	09542	24481	39261	53876	68323	82596	96692	10606	24334	37872	38
39	09792	24729	39506	54118	68562	82832	96925	10836	24561	38096	39
40	1510043	1524977	1539751	1554360	1568801	1583069	1597159	1611067	1624789	1638320	40
41	10293	25224	39996	54602	69040	83305	97392	11297	25016	38544	41
42	10543	25472	40240	54844	69280	83541	97625	11527	25243	38768	42
43	1510793	1525719	1540485	1555086	1569519	1583777	1597858	1611757	1625470	1638992	43
44	11043	25967	40730	55328	69758	84014	98092	11987	25697	39215	44
45	11293	26214	40975	55570	69997	84250	98325	12217	25924	39439	45
46	1511543	1526461	1541219	1555812	1570236	1584486	1598558	1612447	1626150	1639663	46
47	11793	26709	41464	56054	70475	84722	98791	12677	26377	39686	47
48	12043	26956	41708	56296	70714	84958	99024	12907	26604	40110	48
49	1512293	1527203	1541953	1556537	1570952	1585194	1599257	1613137	1626831	1640333	49
50	12543	27450	42197	56779	71191	85429	99489	13367	27057	40557	50
51	12792	27697	42442	57021	71430	85665	99722	13596	27284	40780	51
52	1513042	1527944	1542686	1557262	1571669	1585901	1599955	1613826	1627510	1641003	52
53	13292	28191	42930	57504	71907	86137	100018	14056	27737	41226	53
54	13541	28438	43174	57745	72146	86372	100420	14285	27963	41450	54
55	1513791	1528685	1543419	1557987	1572384	1586608	1600653	1614515	1628189	1641673	55
56	14040	28932	43663	58228	72623	86844	100885	14744	28416	41896	56
57	14290	29179	43907	58469	72861	87079	101118	14974	28642	42119	57
58	1514539	1529426	1544151	1558711	1573100	1587315	1601350	1615203	1628868	1642342	58
59	14789	29673	44395	58952	73338	87550	101583	15432	29094	42565	59
60	15038	29919	44639	59193	73576	87785	101815	15662	29320	42788	60

Parts for Seconds.

(v.)

	120°		121°		122°		123°		124°		125°		126°		127°		128°		129°		130°	
"	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	"
1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	1
2	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	7	7	2
3	13	13	12	12	12	12	12	12	12	12	12	12	12	12	12	11	11	11	11	11	11	3
4	17	17	17	17	16	16	16	16	16	16	16	16	16	15	15	15	15	15	15	15	15	4
5	21	21	21	21	21	20	20	20	20	20	20	20	20	19	19	19	19	19	19	19	19	5
6	25	25	25	25	25	24	24	24	24	24	24	24	23	23	23	23	23	23	22	22	22	6
7	29	29	29	29	29	28	28	28	28	28	28	27	27	27	27	27	27	26	26	26	26	7
8	34	33	33	33	33	32	32	32	32	32	31	31	31	31	31	31	30	30	30	30	30	8
9	38	38	37	37	37	37	36	36	36	36	36	35	35	35	35	34	34	34	34	33	33	9
10	42	42	42	41	41	41	41	40	40	40	40	39	39	39	39	38	38	38	37	37	37	10
11	46	46	46	45	45	45	44	44	44	44	43	43	43	43	42	42	42	41	41	41	41	11
12	50	50	50	50	49	49	49	49	48	48	48	47	47	47	46	46	46	45	45	45	45	12
13	55	54	54	54	53	53	53	53	52	52	52	51	51	51	50	50	50	49	49	49	48	13
14	59	58	58	58	57	57	57	56	56	56	55	55	55	54	54	53	53	52	52	52	52	14
15	63	63	62	62	62	61	61	61	60	60	60	59	59	58	58	57	57	57	56	56	56	15
16	67	67	66	66	66	65	65	65	64	64	64	63	63	62	62	62	61	61	60	60	59	16
17	71	71	71	70	70	70	69	69	68	68	68	67	67	66	66	65	65	64	64	64	63	17
18	76	75	75	74	74	74	73	73	72	72	71	71	71	70	70	69	69	68	68	67	67	18
19	80	79	79	79	78	78	77	77	76	76	75	75	75	74	74	73	73	72	72	71	71	19
20	84	84	83	83	82	82	81	81	80	80	79	79	78	78	77	77	76	76	75	75	74	20
21	88	88	87	87	86	86	85	85	84	84	83	83	82	82	81	81	80	80	79	79	78	21
22	92	92	91	91	90	90	89	89	88	88	87	87	86	86	85	85	84	83	83	82	82	22
23	97	96	96	95	95	94	94	93	92	92	91	91	90	90	89	88	88	87	87	86	85	23
24	101	100	100	99	99	98	98	97	96	96	95	95	94	94	93	92	92	91	90	90	89	24
25	105	104	104	103	103	102	102	101	100	100	99	99	98	97	97	96	96	95	94	94	93	25
26	109	109	108	107	107	106	106	105	104	104	103	103	102	101	101	100	99	99	98	97	97	26
27	113	113	112	112	111	110	110	109	109	108	107	107	106	105	105	104	103	102	101	100	100	27
28	118	117	116	116	115	114	114	113	113	112	111	111	110	109	108	108	107	106	105	105	104	28
29	122	121	121	120	119	119	118	117	117	116	115	114	114	113	112	112	111	110	109	108	108	29
30	126	125	125	124	123	123	122	121	121	120	119	118	118	117	116	115	115	114	113	112	111	30
31	130	130	129	128	127	127	126	125	125	124	123	122	122	121	120	119	118	118	117	116	115	31
32	134	134	133	132	131	130	129	129	128	127	126	126	125	124	123	122	121	120	120	119	119	32
33	139	138	137	136	136	135	134	133	133	132	131	130	129	129	128	127	126	125	124	123	123	33
34	143	142	141	141	140	139	138	137	137	136	135	134	133	133	132	131	130	129	128	127	126	34
35	147	146	145	145	144	143	142	141	141	140	139	138	137	136	136	135	134	133	132	131	130	35
36	151	150	150	149	148	147	146	146	145	144	143	142	141	140	139	138	138	137	136	135	134	36
37	155	155	154	153	152	151	150	150	149	148	147	146	145	144	143	142	141	140	139	139	137	37
38	160	159	158	157	156	155	154	154	153	152	151	150	149	148	147	146	145	144	143	142	141	38
39	164	163	162	161	160	159	158	157	156	155	154	153	152	151	150	149	148	147	146	145	145	39
40	168	167	166	165	164	163	162	161	160	159	158	157	156	155	154	153	152	151	150	149	149	40
41	172	171	170	169	168	167	166	165	164	163	162	161	160	159	158	157	156	155	154	153	152	41
42	176	175	175	174	173	172	171	170	169	168	167	166	165	164	163	162	160	159	158	157	156	42
43	181	180	179	178	177	176	175	174	173	172	171	170	169	168	166	165	164	163	162	161	160	43
44	185	184	183	182	181	180	179	178	177	176	175	174	173	171	170	169	168	167	166	165	163	44
45	189	188	187	186	185	184	183	182	181	180	179	178	177	175	174	173	172	171	170	168	167	45
46	193	192	191	191	189	188	187	186	185	184	183	182	180	179	178	177	176	175	173	172	171	46
47	197	196	195	194	193	192	191	190	189	188	187	185	184	183	182	181	180	178	177	176	175	47
48	202	201	199	198	197	196	195	194	193	192	191	190	188	187	186	185	183	182	181	180	178	48
49	206	205	204	203	201	200	199	198	197	196	195	193	192	191	190	188	187	186	185	183	182	49
50	210	209	208	207	206	204	203	202	201	200	199	197	196	195	194	192	191	190	188	187	186	50
51	214	213	212	211	210	209	207	206	205	204	203	201	200	199	197	196	195	194	192	191	189	51
52	218	217	216	215	214	213	211	210	209	208	207	205	204	203	201	200	199	197	196	195	193	52
53	223	221	220	219	218	217	215	214	213	212	210	209	208	207	205	204	203	201	200	198	197	53
54	227	226	224	223	222	221	220	218	217	216	214	213	212	210	209	208	206	205	203	202	201	54
55	231	230	229	227	226	225	224	222	221	220	218	217	216	214	213	212	210	209	207	206	204	55
56	235	234	233	232	230	229	228	226	225	224	222	221	220	218	217	215	214	212	211	209	208	56
57	239	238	237	236	234	233	232	230	229	228	226	225	224	222	221	219	218	216	215	213	212	57
58	244	242	241	240	238	237	236	234	233	232	230	229	228	226	225	223	222	220	219	217	215	58
59	248	246	246	244	243	241	240	239	237	236	234	233	231	230	228	227	225	224	222	221	219	59
60	252	251	249	248	247	245	244	243	241	240	238	237	235	234	232	231	229	228	226	224	223	60

(v.) Nat. Versines											
	130°	131°	132°	133°	134°	135°	136°	137°	138°	139°	
0	1642788	1656059	1669131	1681998	1694658	1707107	1719340	1731354	1743145	1754710	0
1	1643010	1656279	1669347	1682211	1694868	1707312	1719542	1731552	1743339	1754900	1
2	43233	56498	69563	82424	95077	07518	19744	31750	43534	55091	2
3	43456	56717	69779	82636	95286	07724	19946	31949	43729	55282	3
4	1643679	1656937	1669995	1682849	1695495	1707929	1720148	1732147	1743923	1755472	4
5	43901	57156	70211	83061	95704	08135	20349	32345	44117	55663	5
6	44124	57375	70427	83274	95913	08340	20551	32543	44312	55854	6
7	1644346	1657594	1670642	1683486	1696122	1708545	1720753	1732741	1744506	1756044	7
8	44569	57814	70858	83698	96331	08750	20954	32939	44700	56234	8
9	44791	58033	71074	83911	96539	08956	21156	33137	44894	56425	9
10	1645013	1658252	1671290	1684123	1696748	1709161	1721357	1733335	1745088	1756615	10
11	45236	58471	71505	84335	96957	09366	21559	33532	45282	56808	11
12	45458	58690	71721	84547	97165	09571	21760	33730	45476	56995	12
13	1645680	1658908	1671936	1684759	1697374	1709776	1721962	1733928	1745670	1757185	13
14	45902	59127	72152	84971	97582	09981	22163	34125	45864	57375	14
15	46124	59346	72367	85183	97791	10185	22364	34323	46057	57563	15
16	1646346	1659565	1672582	1685395	1697999	1710390	1722565	1734520	1746251	1757755	16
17	46568	59783	72797	85607	98207	10395	22766	34717	46445	57945	17
18	46790	60002	73013	85818	98415	10800	22967	34915	46638	58134	18
19	1647012	1660220	1673228	1686030	1698623	1711004	1723168	1735112	1746832	1758324	19
20	47233	60439	73443	86242	98832	11209	23369	35309	47025	58514	20
21	47455	60657	73658	86453	99040	11413	23570	35506	47218	58703	21
22	1647677	1660875	1673873	1686665	1699248	1711617	1723771	1735703	1747412	1758893	22
23	47898	61094	74088	86876	99456	11822	23971	35900	47605	59082	23
24	48120	61312	74302	87088	99663	12026	24172	36097	47798	59271	24
25	1648341	1661530	1674517	1687299	1699871	1712230	1724372	1736294	1747991	1759461	25
26	48563	61748	74732	87510	100079	12434	24573	36491	48184	59650	26
27	48784	61966	74947	87721	100287	12639	24773	36688	48377	59839	27
28	1649006	1662184	1675161	1687933	1700494	1712843	1724974	1736884	1748570	1760028	28
29	49227	62402	75376	88144	100702	13047	25174	37081	48763	60217	29
30	49448	62620	75590	88355	100909	13250	25374	37277	48956	60406	30
31	1649669	1662838	1675805	1688566	1701117	1713454	1725575	1737474	1749148	1760595	31
32	49890	63056	76019	88777	101324	13658	25775	37670	49341	60784	32
33	50111	63273	76233	88987	101531	13862	25975	37867	49534	60972	33
34	1650332	1663491	1676448	1689198	1701739	1714066	1726175	1738063	1749726	1761161	34
35	50553	63709	76662	89409	101946	14269	26375	38259	49919	61350	35
36	50774	63926	76876	89620	102153	14473	26575	38455	50111	61538	36
37	1650995	1664144	1677020	1689830	1702360	1714676	1726775	1738652	1750303	1761727	37
38	51216	64361	77304	90041	102567	14880	26974	38848	50496	61915	38
39	51437	64579	77518	90251	102774	15083	27174	39044	50688	62104	39
40	1651657	1664796	1677732	1690462	1702981	1715286	1727374	1739239	1750880	1762292	40
41	51878	65013	77946	90672	103188	15490	27573	39435	51072	62489	41
42	52098	65230	78160	90882	103395	15693	27773	39631	51264	62683	42
43	1652319	1665448	1678373	1691093	1703601	1715896	1727972	1739827	1751456	1762856	43
44	52539	65665	78587	91303	103808	16099	28172	40023	51648	63045	44
45	52760	65882	78801	91513	104015	16302	28371	40218	51840	63233	45
46	1652980	1666099	1679014	1691723	1704221	1716505	1728570	1740414	1752032	1763420	46
47	53200	66316	79228	91933	104428	16708	28770	40609	52223	63603	47
48	53421	66533	79441	92143	104634	16911	28969	40805	52415	63796	48
49	1653641	1666749	1679655	1692353	1704841	1717113	1729168	1741000	1752607	1763984	49
50	53861	66966	79868	92563	105047	17316	29367	41195	52798	64171	50
51	54081	67183	80081	92773	105253	17519	29566	41391	52989	64359	51
52	1654301	1667399	1680295	1692983	1705459	1717721	1729765	1741536	1753181	1764547	52
53	54521	67616	80508	93192	105665	17924	29963	41781	53372	64734	53
54	54741	67833	80721	93402	105872	18126	30162	41976	53563	64921	54
55	1654961	1668049	1680934	1693611	1706078	1718329	1730361	1742171	1753755	1765109	55
56	55180	68266	81147	93821	106284	18531	30560	42366	53946	65296	56
57	55400	68482	81360	94030	106489	18733	30758	42561	54137	65483	57
58	1655620	1668698	1681573	1694240	1706695	1718936	1730957	1742755	1754328	1765670	58
59	55840	68914	81786	94449	106901	19138	31155	42950	54519	65857	59
60	56059	69131	81998	94658	107107	19340	31354	43145	54710	66044	60

Parts for Seconds.

(v.)

	130°		131°		132°		133°		134°		135°		136°		137°		138°		139°		140°	
"	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	"
1	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	1
2	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6	6	2
3	11	11	11	11	11	11	11	11	10	10	10	10	10	10	10	10	10	10	10	9	9	3
4	15	15	15	15	14	14	14	14	14	14	14	14	13	13	13	13	13	13	13	13	12	4
5	19	18	18	18	18	18	18	18	17	17	17	17	17	17	17	16	16	16	16	16	16	5
6	22	22	22	22	22	21	21	21	21	21	21	20	20	20	20	20	19	19	19	19	19	6
7	26	26	26	25	25	25	25	25	24	24	24	24	24	23	23	23	23	22	22	22	22	7
8	30	29	29	29	29	29	28	28	28	28	27	27	27	27	26	26	26	26	25	25	25	8
9	33	33	33	33	32	32	32	32	31	31	31	31	30	30	30	29	29	29	29	28	28	9
10	37	37	37	36	36	36	35	35	35	35	34	34	34	33	33	33	32	32	32	31	31	10
11	41	41	40	40	40	39	39	39	38	38	38	37	37	37	36	36	36	35	35	35	34	11
12	45	44	44	44	43	43	43	42	42	41	41	41	40	40	40	39	39	39	38	38	37	12
13	48	48	47	47	46	46	46	45	45	45	44	44	43	43	43	42	42	41	41	41	41	13
14	52	52	51	51	50	50	50	49	49	49	48	48	47	47	46	46	45	45	45	44	44	14
15	56	55	55	54	54	54	53	53	52	52	51	51	51	50	50	49	49	48	48	47	47	15
16	59	59	59	58	58	57	57	56	56	55	55	54	54	53	53	52	52	51	51	50	50	16
17	63	63	62	62	61	61	60	60	59	59	58	58	57	57	56	56	55	55	54	54	53	17
18	67	66	66	65	65	64	64	63	63	62	62	61	61	60	60	59	58	58	57	57	56	18
19	71	70	70	69	68	68	67	67	66	66	65	65	64	63	63	62	62	61	60	60	59	19
20	74	74	73	73	72	71	71	70	70	69	69	68	67	67	66	65	65	64	64	63	62	20
21	78	77	77	76	76	75	74	74	73	73	72	71	70	70	69	69	68	67	67	66	65	21
22	82	81	80	80	79	79	78	77	77	76	75	75	74	73	73	72	71	71	70	69	69	22
23	85	85	84	84	83	82	82	81	80	80	79	78	77	77	76	75	75	74	73	72	72	23
24	89	88	88	87	86	86	85	84	84	83	82	82	81	80	79	79	78	77	76	76	75	24
25	93	92	91	91	90	89	89	88	87	86	85	84	83	83	82	81	80	80	79	79	78	25
26	97	96	95	94	94	93	92	91	91	90	89	88	87	87	86	85	84	84	83	82	81	26
27	100	100	99	98	97	97	96	95	94	93	92	92	91	90	89	88	88	87	86	85	84	27
28	104	103	102	102	101	100	99	98	98	97	96	96	94	93	93	92	91	90	89	88	87	28
29	108	107	106	105	104	104	103	102	101	100	99	99	98	97	96	95	94	93	92	91	90	29
30	111	111	110	109	108	107	106	105	105	104	103	102	101	100	99	98	97	96	95	94	93	30
31	115	114	113	113	112	111	110	109	108	107	106	105	104	103	103	102	101	100	99	98	97	31
32	119	118	117	116	115	114	113	113	112	111	110	109	108	107	106	105	104	103	102	101	100	32
33	123	122	121	120	119	118	117	116	115	114	113	112	111	110	109	108	107	106	105	104	103	33
34	126	125	124	123	123	121	121	120	119	118	117	116	114	113	112	111	110	109	108	107	106	34
35	130	129	128	127	126	125	124	123	122	121	120	119	118	117	116	115	114	112	111	110	109	35
36	134	133	132	131	130	129	128	127	126	124	123	122	121	120	119	118	117	116	115	113	112	36
37	137	136	135	134	133	132	131	130	129	128	127	126	125	123	122	121	120	119	118	117	115	37
38	141	140	139	138	137	136	135	134	133	131	130	129	128	127	126	124	123	122	121	120	118	38
39	145	144	143	142	141	139	138	137	136	135	134	132	131	130	129	128	126	125	124	123	122	39
40	149	147	146	145	144	143	142	141	139	138	137	136	135	133	132	131	130	128	127	126	125	40
41	152	151	150	149	148	147	145	144	143	142	141	139	138	137	136	134	133	132	130	129	128	41
42	156	155	154	152	151	150	149	148	146	145	144	143	141	140	139	138	136	135	134	132	131	42
43	160	159	157	156	155	154	152	151	150	149	147	146	145	144	142	141	139	138	137	135	134	43
44	163	162	161	160	159	157	156	155	153	152	151	150	148	147	145	144	143	141	140	139	137	44
45	167	166	165	163	162	161	160	158	157	156	154	153	152	150	149	147	146	145	143	142	140	45
46	171	170	168	167	166	164	163	162	160	159	158	156	155	154	152	151	149	148	146	145	143	46
47	175	173	172	171	169	168	167	165	164	163	161	160	158	157	155	154	152	151	150	148	146	47
48	178	177	176	174	173	172	170	169	167	166	165	163	162	160	159	157	156	154	153	151	150	48
49	182	181	179	178	177	175	174	172	171	169	168	167	165	164	162	160	159	157	156	154	153	49
50	186	184	183	182	180	179	177	176	174	173	171	170	168	167	165	164	162	161	160	157	156	50
51	189	188	187	185	184	182	181	179	178	176	175	173	172	170	169	167	165	164	162	161	159	51
52	193	192	190	189	187	186	184	183	181	180	178	177	175	174	172	170	169	167	165	164	162	52
53	197	195	194	192	191	189	188	186	185	183	182	180	178	177	175	174	172	170	169	167	165	53
54	201	199	198	196	195	193	191	190	188	187	185	184	182	180	179	177	175	173	172	170	168	54
55	204	203	201	200	198	197	195	193	192	190	189	187	185	184	182	180	178	177	175	173	171	55
56	208	206	205	203	202	200	199	197	195	194	192	190	189	187	185	183	182	180	178	176	174	56
57	212	210	209	207	205	204	202	200	199	197	195	194	192	190	188	187	185	183	181	180	178	57
58	215	214	212	211	209	207	206	204	202	200	199	197	195	194	192	190	188	186	184	183	181	58
59	219	218	216	214	213	211	209	207	206	204	202	201	199	197	195	193	191	190	188	186	184	59
60	223	221	219	219	216	214	213	211	209	207	206	204	202	200	198	196	195	193	190	189	187	60

(v.)		Nat. Versines.										
	140°	141°	142°	143°	144°	145°	146°	147°	148°	149°		
0	1766044	1777146	1788011	1798636	1809017	1819152	1829038	1838671	1848048	1857167	0	
1	1766231	1777329	1788190	1798811	1809188	1819319	1829200	1838829	1848202	1857317	1	
2	66418	77512	88369	98985	09359	19486	29363	38987	48356	57467	2	
3	66605	77695	88548	99160	09530	19652	29525	39146	48510	57616	3	
4	1766792	1777878	1788727	1799335	1809700	1819819	1829688	1839304	1848664	1857766	4	
5	66979	78060	88905	99510	09871	19985	29850	39462	48818	57916	5	
6	67165	78243	89084	99685	10042	20159	30012	39620	48972	58005	6	
7	1767352	1778426	1789263	1799859	1810212	1820318	1830175	1839778	1849125	1858214	7	
8	67538	78608	89441	1800034	10383	20485	30337	39936	49279	58364	8	
9	67725	78791	89620	00208	10553	20651	30499	40094	49433	58513	9	
10	1767911	1778973	1789798	1800383	1810723	1820817	1830661	1840251	1849586	1858662	10	
11	68097	79156	89977	00557	10894	20983	30823	40409	49739	58811	11	
12	68284	79338	90155	00731	11064	21149	30985	40567	49893	58960	12	
13	1768470	1779520	1790333	1800906	1811234	1821315	1831146	1840724	1850046	1859109	13	
14	68656	79702	90512	01080	11404	21481	31308	40882	50199	59258	14	
15	68842	79885	90690	01254	11574	21647	31470	41039	50352	59466	15	
16	1769028	1780067	1790868	1801428	1811744	1821813	1831631	1841196	1850505	1859555	16	
17	69214	80249	91046	01602	11914	21978	31793	41354	50658	59704	17	
18	69400	80430	91224	01776	12084	22144	31954	41511	50811	59852	18	
19	1769585	1780612	1791401	1801950	1812253	1822310	1832116	1841668	1850961	1860001	19	
20	69771	80794	91579	02123	12423	22475	32277	41825	51117	60149	20	
21	69957	80976	91757	02297	12593	22611	32438	41982	51269	60298	21	
22	1770142	1781157	1791935	1802471	1812762	1822806	1832599	1842139	1851422	1860446	22	
23	70328	81339	92112	02644	12931	22971	32760	42296	51575	60594	23	
24	70513	81521	92290	02818	13101	23136	32921	42452	51727	60742	24	
25	1770699	1781702	1792467	1802991	1813270	1823302	1833082	1842609	1851879	1860890	25	
26	70884	81883	92645	03164	13439	23467	33243	42766	52032	61038	26	
27	71069	82065	92822	03338	13608	23632	33404	42922	52184	61186	27	
28	1771254	1782246	1792999	1803511	1813778	1823797	1833565	1843079	1852336	1861334	28	
29	71440	82427	93176	03684	13947	23961	33725	43235	52488	61482	29	
30	71625	82608	93353	03857	14116	24126	33886	43391	52640	61629	30	
31	1771810	1782789	1793530	1804030	1814284	1824291	1834046	1843548	1852792	1861777	31	
32	71995	82970	93707	04203	14453	24456	34207	43704	52944	61924	32	
33	72179	83151	93884	04376	14622	24620	34367	43860	53096	62072	33	
34	1772364	1783332	1794061	1804548	1814791	1824785	1834528	1844016	1853248	1862219	34	
35	72549	83513	94238	04721	14959	24949	34688	44172	53399	62366	35	
36	72734	83694	94415	04894	15128	25114	34848	44328	53551	62514	36	
37	1772918	1783874	1794591	1805066	1815296	1825278	1835008	1844484	1853702	1862661	37	
38	73103	84055	94768	05239	15465	25442	35168	44640	53854	62808	38	
39	73287	84235	94944	05411	15633	25606	35328	44795	54005	62955	39	
40	1773472	1784416	1795121	1805584	1815801	1825770	1835488	1844951	1854156	1863102	40	
41	73656	84596	95297	05756	15970	25934	35648	45106	54308	63249	41	
42	73840	84776	95474	05928	16138	26098	35807	45262	54459	63396	42	
43	1774024	1784957	1795650	1806101	1816306	1826262	1835967	1845417	1854610	1863542	43	
44	74209	85137	95826	06273	16474	26426	36127	45573	54761	63689	44	
45	74393	85317	96002	06445	16642	26590	36286	45728	54912	63836	45	
46	1774577	1785497	1796178	1806617	1816809	1826753	1836446	1845883	1855063	1863982	46	
47	74761	85677	96354	06789	16977	26917	36605	46038	55214	64128	47	
48	74945	85857	96530	06960	17145	27081	36764	46193	55364	64275	48	
49	1775128	1786037	1796706	1807132	1817313	1827244	1836924	1846348	1855515	1864421	49	
50	75312	86217	96892	07304	17480	27407	37083	46503	55666	64567	50	
51	75496	86396	97057	07475	17648	27571	37242	46658	55816	64713	51	
52	1775679	1786576	1797233	1807647	1817815	1827734	1837401	1846813	1855966	1864860	52	
53	75863	86756	97408	07819	17932	27897	37560	46967	56117	65006	53	
54	76046	86935	97584	07990	18150	28060	37719	47122	56267	65151	54	
55	1776230	1787115	1797759	1808161	1818317	1828223	1837878	1847277	1856417	1865297	55	
56	76413	87294	97935	08333	18404	28386	38036	47431	56567	65443	56	
57	76597	87473	98110	08504	18651	28549	38195	47585	56718	65589	57	
58	1776780	1787652	1798285	1808675	1818818	1828712	1838354	1847740	1856868	1865734	58	
59	76963	87832	98460	08846	18985	28875	38512	47894	57017	65880	59	
60	77146	88011	98636	09017	19152	29038	38671	48048	57167	66025	60	

Parts for Seconds

(v.)

	140°		141°		142°		143°		144°		145°		146°		147°		148°		149°		150°	
"	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'
1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	1	1
2	6	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	5	2	2
3	9	9	9	9	9	9	9	9	9	8	8	8	8	8	8	8	7	7	7	7	3	3
4	12	12	12	12	12	12	12	12	11	11	11	11	11	11	10	10	10	10	10	10	4	4
5	16	15	15	15	15	15	15	14	14	14	14	14	13	13	13	13	13	13	12	12	5	5
6	19	19	18	18	18	18	18	17	17	17	17	16	16	16	16	15	15	15	15	15	6	6
7	22	22	21	21	21	21	20	20	20	20	19	19	19	19	18	18	18	18	17	17	7	7
8	25	25	24	24	24	24	23	23	23	23	22	22	22	21	21	21	21	20	20	20	8	8
9	28	28	27	27	27	27	26	26	26	25	25	25	24	24	24	23	23	23	22	22	9	9
10	31	31	31	30	30	30	29	29	28	28	28	27	27	27	26	26	26	25	25	25	10	10
11	34	34	34	33	33	32	32	32	31	31	31	30	30	29	29	29	28	28	27	27	11	11
12	37	37	37	36	36	35	35	35	34	34	33	33	33	32	32	31	31	30	30	30	12	12
13	41	40	40	39	39	38	38	37	37	37	36	36	35	35	34	34	33	33	32	32	13	13
14	44	43	43	42	42	41	41	40	40	39	39	38	38	37	37	36	36	35	35	34	14	14
15	47	46	46	45	45	44	44	43	43	42	42	41	41	40	40	39	39	38	37	37	15	15
16	50	49	49	48	48	47	47	46	46	45	44	44	43	43	42	42	41	41	40	39	16	16
17	53	52	52	51	51	50	50	49	48	48	47	47	46	45	45	44	44	43	42	42	17	17
18	56	56	55	54	54	53	53	52	51	51	50	49	49	48	48	47	46	46	45	44	18	18
19	59	59	58	57	57	56	55	55	54	53	53	52	52	51	50	49	49	48	47	47	19	19
20	62	62	61	60	60	59	58	58	57	56	56	55	54	54	53	52	51	51	50	49	20	20
21	65	65	64	63	63	62	61	60	60	59	58	58	57	56	55	55	54	53	52	52	21	21
22	69	68	67	66	66	65	64	63	63	62	61	60	60	59	58	57	57	56	55	54	22	22
23	72	71	70	69	69	68	67	66	66	65	64	63	63	62	61	60	59	58	57	56	23	23
24	75	74	73	72	72	71	70	69	68	68	67	66	65	64	63	63	62	61	60	59	24	24
25	78	77	76	75	75	74	73	72	71	70	70	69	68	67	66	65	64	63	62	62	25	25
26	81	80	79	78	78	77	76	75	74	73	72	71	71	70	69	68	67	66	65	64	26	26
27	84	83	82	81	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	27	27
28	87	86	85	84	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	28	28
29	90	89	88	87	87	86	85	84	83	82	81	80	79	78	77	76	75	73	72	71	29	29
30	93	93	92	91	90	89	88	87	86	85	84	83	82	82	80	79	78	77	76	75	30	30
31	97	96	95	94	93	91	90	89	88	87	86	85	84	83	82	81	80	79	77	76	31	31
32	100	99	98	97	96	94	93	92	91	90	89	88	87	86	85	83	82	81	80	79	32	32
33	103	102	101	100	98	97	96	95	94	93	92	91	90	88	87	86	85	84	82	81	33	33
34	106	105	104	103	101	100	99	98	97	96	95	93	92	91	90	89	87	86	85	84	34	34
35	109	108	107	106	104	103	102	101	100	99	97	96	95	94	92	91	90	89	87	86	35	35
36	112	111	110	109	107	106	105	104	103	101	100	99	98	96	95	94	92	91	90	89	36	36
37	115	114	113	112	110	109	108	107	105	104	103	102	101	99	98	96	95	94	92	91	37	37
38	118	117	116	115	113	112	111	110	108	107	106	104	103	102	100	99	98	96	95	94	38	38
39	122	120	119	118	116	115	114	112	111	110	108	107	106	104	103	102	100	99	97	96	39	39
40	125	123	122	121	119	118	117	115	114	113	111	110	109	107	106	104	103	101	100	98	40	40
41	128	126	125	124	122	121	120	118	117	115	114	113	111	110	108	107	105	104	102	101	41	41
42	131	130	128	127	125	124	123	121	120	118	117	115	114	112	111	109	108	106	105	103	42	42
43	134	133	131	130	128	127	125	124	123	121	120	118	117	115	114	112	110	109	107	106	43	43
44	137	136	134	133	131	130	128	127	125	124	122	121	120	118	116	115	113	111	110	108	44	44
45	140	139	137	136	134	133	131	130	128	127	125	124	122	120	119	117	116	114	112	111	45	45
46	143	142	140	139	137	136	134	133	131	130	128	126	125	123	121	120	118	117	115	113	46	46
47	146	145	143	142	140	139	137	136	134	132	131	129	128	126	124	122	121	119	117	116	47	47
48	150	148	146	145	143	142	140	138	137	135	133	132	131	128	127	125	123	122	120	118	48	48
49	153	151	149	148	146	145	143	141	140	138	136	135	133	131	129	128	126	124	122	121	49	49
50	156	154	152	151	149	148	146	144	142	141	139	137	136	134	132	130	128	127	125	123	50	50
51	159	157	156	154	152	150	149	147	145	144	142	140	139	136	135	133	131	129	127	126	51	51
52	162	160	159	157	155	153	152	150	148	146	145	143	141	139	137	135	134	132	130	128	52	52
53	165	163	162	160	158	156	155	153	151	149	147	146	144	142	140	138	136	134	132	130	53	53
54	168	167	165	163	161	159	158	156	154	152	150	148	147	144	143	141	139	137	135	133	54	54
55	171	170	168	166	164	162	160	159	157	155	153	151	150	147	145	143	141	139	137	135	55	55
56	174	173	171	169	167	165	163	162	160	158	156	154	152	150	148	146	144	142	140	138	56	56
57	178	176	174	172	170	168	166	164	162	160	159	157	155	153	151	148	146	144	142	140	57	57
58	181	179	177	175	173	171	169	167	165	163	161	159	158	155	153	151	149	147	145	143	58	58
59	184	182	180	178	176	174	172	170	168	166	164	162	160	158	156	154	152	150	147	145	59	59
60	187	185	183	181	179	177	175	173	171	169	167	165	163	161	158	156	154	152	150	148	60	60

(v.)

Nat. Versines.

	150°	151°	152°	153°	154°	155°	156°	157°	158°	159°	
0	1866025	1874620	1882948	1891007	1898794	1906308	1913546	1920505	1927184	1933580	0
1	1866171	1874761	1883084	1891139	1898922	1906431	1913664	1920619	1927293	1933685	1
2	66316	74902	83221	91271	99049	06554	13782	20732	27402	33789	2
3	66461	75043	83357	91402	99176	06676	13900	20846	27510	33893	3
4	1866607	1875183	1883493	1891534	1899304	1906799	1914018	1920959	1927619	1933997	4
5	66752	75324	83630	91666	99431	06922	14136	21072	27728	34101	5
6	66897	75465	83766	91798	99558	07044	14254	21185	27836	34205	6
7	1867042	1875605	1883902	1891929	1899685	1907167	1914372	1921299	1927945	1934308	7
8	67187	75746	84038	92061	99812	07289	14490	21412	28053	34412	8
9	67331	75886	84174	92192	99939	07411	14607	21525	28161	34515	9
10	1867476	1876026	1884310	1892323	1900065	1907533	1914725	1921638	1928270	1934619	10
11	67621	76167	84445	92455	00192	07655	14842	21750	28378	34722	11
12	67766	76307	84581	92586	00319	07778	14960	21863	28486	34826	12
13	1867910	1876447	1884717	1892717	1900445	1907900	1915077	1921976	1928594	1934929	13
14	68054	76567	84852	92848	00572	08021	15194	22088	28702	35032	14
15	68199	76727	84988	92979	00698	08143	15312	22201	28810	35135	15
16	1868343	1876867	1885123	1893110	1900825	1908265	1915429	1922313	1928917	1935238	16
17	68487	77006	85258	93241	00951	08387	15546	22426	29025	35341	17
18	68632	77146	85394	93371	01077	08508	15663	22538	29133	35444	18
19	1868776	1877286	1885529	1893502	1901203	1908630	1915780	1922650	1929240	1935547	19
20	68920	77425	85664	93633	01329	08751	15896	22762	29348	35650	20
21	69064	77565	85799	93763	01455	08873	16013	22875	29455	35752	21
22	1869207	1877704	1885934	1893894	1901581	1908994	1916130	1922987	1929562	1935855	22
23	69351	77844	86069	94024	01707	09115	16246	23098	29669	35957	23
24	69495	77983	86204	94154	01833	09236	16363	23210	29777	36060	24
25	1869639	1878122	1886338	1894284	1901958	1909357	1916479	1923322	1929884	1936162	25
26	69782	78261	86473	94415	02084	09478	16596	23434	29991	36264	26
27	69926	78400	86608	94545	02209	09599	16712	23545	30097	36366	27
28	1870069	1878539	1886742	1894675	1902335	1909720	1916828	1923657	1930204	1936468	28
29	70212	78678	86877	94805	02460	09841	16944	23768	30311	36570	29
30	70356	78817	87011	94934	02585	09961	17060	23880	30418	36672	30
31	1870499	1878956	1887145	1895064	1902711	1910082	1917176	1923991	1930524	1936774	31
32	70642	79095	87279	95194	02836	10202	17292	24102	30631	36876	32
33	70785	79233	87413	95323	02961	10323	17408	24213	30737	36977	33
34	1870928	1879372	1887548	1895453	1903086	1910443	1917523	1924324	1930843	1937079	34
35	71071	79510	87682	95582	03211	10563	17639	24435	30950	37181	35
36	71214	79649	87815	95712	03335	10684	17755	24546	31056	37282	36
37	1871357	1879787	1887949	1895841	1903460	1910804	1917870	1924657	1931162	1937383	37
38	71499	79925	88083	95970	03585	10924	17986	24768	31263	37485	38
39	71642	80063	88217	96099	03709	11044	18101	24878	31374	37586	39
40	1871784	1880201	1888350	1896229	1903834	1911164	1918216	1924989	1931480	1937687	40
41	71927	80339	88484	96358	03958	11284	18331	25099	31586	37788	41
42	72069	80477	88617	96486	04083	11403	18446	25210	31691	37889	42
43	1872212	1880615	1888751	1896615	1904207	1911523	1918561	1925320	1931797	1937990	43
44	72354	80753	88884	96744	04331	11643	18676	25430	31902	38091	44
45	72496	80891	89017	96873	04455	11762	18791	25541	32008	38191	45
46	1872638	1881028	1889150	1897001	1904579	1911882	1918906	1925651	1932113	1938292	46
47	72780	81166	89283	97130	04703	12001	19021	25761	32219	38393	47
48	72922	81304	89416	97256	04827	12120	19135	25871	32324	38493	48
49	1873064	1881441	1889549	1897387	1904951	1912239	1919250	1925991	1932429	1938593	49
50	73206	81578	89682	97515	05075	12358	19364	26090	32534	38694	50
51	73347	81716	89815	97643	05198	12478	19479	26200	32639	38794	51
52	1873489	1881853	1889948	1897771	1905322	1912597	1919593	1926310	1932744	1938894	52
53	73631	81990	90080	97900	05445	12715	19707	26419	32849	38994	53
54	73772	82127	90213	98028	05569	12834	19822	26529	32954	39094	54
55	1873914	1882264	1890345	1898156	1905692	1912953	1919936	1926638	1933058	1939194	55
56	74055	82401	90478	98283	05815	13072	20050	26747	33163	39294	56
57	74196	82538	90610	98411	05939	13190	20164	26857	33267	39394	57
58	1874338	1882674	1890742	1898539	1906062	1913309	1920277	1926966	1933372	1939494	58
59	74479	82811	90874	98667	06185	13427	20391	27075	33476	39593	59
60	74620	82948	91007	98794	06308	13546	20505	27184	33580	39693	60

Parts for Seconds.

(v.)

	150°		151°		152°		153°		154°		155°		156°		157°		158°		159°		160°	
"	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	"
1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
2	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	3	3	3	2
3	7	7	7	7	7	7	7	6	6	6	6	6	6	6	6	6	5	5	5	5	5	3
4	10	10	9	9	9	9	9	9	8	8	8	8	8	8	7	7	7	7	7	7	7	4
5	12	12	12	12	11	11	11	11	10	10	10	10	10	9	9	9	9	9	8	8	8	5
6	15	14	14	14	14	13	13	13	13	12	12	12	12	11	11	11	11	10	10	10	10	6
7	17	17	16	16	16	16	15	15	15	15	14	14	14	14	13	13	13	12	12	12	12	7
8	19	19	19	19	18	18	18	17	17	17	16	16	16	15	15	15	15	14	14	14	13	8
9	22	21	21	21	20	20	20	19	19	19	18	18	18	17	17	17	16	16	16	15	15	9
10	24	24	24	23	23	22	22	22	21	21	20	20	20	19	19	19	18	18	17	17	17	10
11	27	26	26	25	25	24	24	24	23	23	22	22	21	21	20	20	20	20	19	19	18	11
12	29	29	28	28	27	27	26	26	25	25	25	24	24	23	23	22	22	21	21	20	20	12
13	32	31	31	30	30	29	29	28	28	27	27	26	26	25	25	24	24	23	23	22	22	13
14	34	33	33	32	32	31	31	30	30	29	29	28	28	27	27	26	25	25	24	24	23	14
15	36	36	35	35	34	34	33	32	32	31	31	30	30	29	28	28	27	27	26	25	25	15
16	39	38	38	37	36	36	35	35	34	33	33	32	32	31	30	30	29	28	28	27	27	16
17	41	41	40	39	39	38	37	37	36	35	35	34	34	33	32	32	31	30	30	29	28	17
18	44	43	42	42	41	40	40	39	38	38	37	36	35	35	34	33	33	32	31	31	30	18
19	46	45	45	44	43	43	42	41	40	40	39	38	37	37	36	35	35	34	33	32	32	19
20	48	48	47	46	46	45	44	43	42	42	41	40	39	39	38	37	36	36	35	34	33	20
21	51	50	49	49	48	47	46	45	45	44	43	42	41	41	40	39	38	37	36	36	35	21
22	53	53	52	51	50	49	48	48	47	46	45	44	43	43	42	41	40	39	38	37	36	22
23	56	55	54	53	52	51	51	50	49	48	47	46	45	44	44	43	42	41	40	39	38	23
24	58	57	56	56	55	54	53	52	51	50	49	48	47	46	45	45	44	43	42	41	40	24
25	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	25
26	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	26
27	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	27
28	68	67	66	65	64	63	62	61	59	58	57	56	55	54	53	52	51	50	49	48	46	28
29	70	69	68	67	66	65	64	63	62	61	59	58	57	56	55	54	53	52	50	49	48	29
30	73	72	71	69	68	67	66	65	64	63	61	60	59	58	57	56	55	53	52	51	50	30
31	75	74	73	72	71	69	68	67	66	65	64	62	61	60	59	58	56	55	54	53	51	31
32	78	76	75	74	73	72	70	69	68	67	66	64	63	62	61	59	58	57	56	54	53	32
33	80	79	78	76	75	74	73	71	70	69	68	66	65	64	63	61	60	59	57	56	55	33
34	82	81	80	79	77	76	75	74	72	71	70	68	67	66	64	63	62	60	59	58	56	34
35	85	84	82	81	80	78	77	76	74	73	72	70	69	68	66	65	64	62	61	59	58	35
36	87	86	85	83	82	81	79	78	76	75	74	72	71	70	68	67	65	64	63	61	60	36
37	90	88	87	86	84	83	81	80	79	77	76	74	73	72	70	69	67	66	64	63	61	37
38	92	91	89	88	86	85	84	82	81	79	78	76	75	73	72	70	69	68	66	65	63	38
39	95	93	92	90	89	87	86	84	83	81	80	78	77	75	74	72	71	69	68	66	65	39
40	97	95	94	93	91	90	88	87	85	83	82	80	79	77	76	74	73	71	70	68	66	40
41	99	98	96	95	93	92	90	89	87	86	84	82	81	79	78	76	74	73	71	70	68	41
42	102	100	99	97	96	94	92	91	89	88	86	84	83	81	80	78	76	75	73	71	70	42
43	104	103	101	99	98	96	95	93	91	90	88	86	85	83	81	80	78	76	74	73	71	43
44	107	105	103	102	100	98	97	95	93	92	90	88	87	85	83	82	80	78	76	75	73	44
45	109	107	106	104	102	101	99	97	96	94	92	90	89	87	85	83	82	80	78	76	75	45
46	112	110	108	106	105	103	101	100	98	96	94	92	91	89	87	85	84	82	80	78	76	46
47	114	112	110	109	107	105	103	102	100	98	96	95	93	91	89	87	85	84	82	80	78	47
48	116	115	113	111	109	107	106	104	102	100	98	97	95	93	91	89	87	85	83	81	80	48
49	119	117	115	113	112	110	108	106	104	102	100	99	97	95	93	91	89	87	85	83	81	49
50	121	119	118	116	114	112	110	108	106	104	102	101	99	97	95	93	91	89	87	85	83	50
51	124	122	120	118	116	114	112	110	108	106	105	103	101	99	97	95	93	91	89	87	85	51
52	126	124	122	120	118	116	114	112	110	109	107	105	103	101	98	96	94	92	90	88	86	52
53	128	127	125	123	121	119	117	115	113	111	109	107	105	102	100	98	96	94	92	90	88	53
54	131	129	127	125	123	121	119	117	115	113	111	109	106	104	102	100	98	96	94	92	90	54
55	133	131	129	127	125	123	121	119	117	115	113	111	108	106	104	102	100	98	96	93	91	55
56	136	134	132	130	127	125	123	121	119	117	115	113	110	108	106	104	102	99	97	95	93	56
57	138	136	134	132	130	128	125	123	121	119	117	115	112	110	108	106	104	101	99	97	95	57
58	141	138	136	134	132	130	128	125	123	121	119	117	114	112	110	108	105	103	101	98	96	58
59	143	141	139	137	134	131	130	128	125	123	121	119	116	114	112	109	107	105	103	100	98	59
60	145	143	141	139	136	134	132	130	127	125	123	121	118	116	114	111	109	107	104	102	99	60

(v.)		Nat. Versines.									
	160°	161°	162°	163°	164°	165°	166°	167°	168°	16	
0	1939693	1945519	1951057	1956305	1961262	1965926	1970206	1974370	1978148	1981	
1	1939792	1945613	1951146	1956390	1961342	1966001	1970366	1974436	1978208	1981	
2	39891	45708	51236	56475	61422	66076	70436	74501	78268	81	
3	39991	45802	51326	56560	61502	66151	70507	74566	78329	81	
4	1940090	1945897	1951415	1956644	1961582	1966226	1970577	1974631	1978389	1981	
5	40189	45991	51505	56729	61662	66301	70647	74696	78449	81	
6	40288	46085	51594	56814	61741	66376	70717	74761	78509	81	
7	1940387	1946180	1951684	1956898	1961821	1966451	1970786	1974826	1978569	1982	
8	40486	46274	51773	56983	61901	66526	70856	74891	78629	82	
9	40585	46368	51862	57067	61980	66600	70926	74956	78689	82	
10	1940684	1946462	1951951	1957151	1962050	1966675	1970995	1975020	1978748	1982	
11	40782	46556	52040	57235	62139	66749	71065	75085	78808	82	
12	40881	46649	52129	57320	62218	66823	71134	75149	78867	82	
13	1940979	1946743	1952218	1957404	1962297	1966898	1971204	1975214	1978927	1982	
14	41078	46837	52307	57488	62376	66972	71273	75278	78986	82	
15	41176	46930	52396	57571	62455	67046	71342	75342	79046	82	
16	1941274	1947024	1952484	1957655	1962534	1967120	1971411	1975407	1979105	1982	
17	41372	47117	52573	57739	62613	67194	71480	75471	79164	82	
18	41471	47210	52662	57823	62692	67268	71549	75535	79223	82	
19	1941569	1947304	1952750	1957906	1962770	1967342	1971618	1975599	1979282	1982	
20	41667	47397	52838	57990	62849	67415	71687	75662	79341	82	
21	41764	47490	52926	58073	62928	67489	71755	75726	79399	82	
22	1941862	1947583	1953015	1958156	1963006	1967562	1971824	1975790	1979458	1982	
23	41960	47676	53103	58239	63084	67636	71893	75853	79517	82	
24	42058	47768	53191	58323	63163	67709	71961	75917	79575	82	
25	1942155	1947861	1953279	1958406	1963241	1967783	1972029	1975980	1979634	1982	
26	42253	47954	53366	58489	63319	67856	72098	76044	79692	82	
27	42350	48046	53454	58572	63397	67929	72166	76107	79750	82	
28	1942447	1948139	1953542	1958654	1963475	1968002	1972234	1976170	1979809	1983	
29	42544	48231	53629	58737	63553	68075	72302	76233	79867	83	
30	42642	48324	53717	58820	63631	68148	72370	76296	79925	83	
31	1942739	1948416	1953804	1958902	1963708	1968220	1972438	1976359	1979983	1983	
32	42836	48508	53892	58985	63786	68293	72506	76353	80041	83	
33	42932	48600	53979	59067	63863	68366	72573	76485	80098	83	
34	1943029	1948692	1954066	1959150	1963941	1968438	1972641	1976547	1980156	1983	
35	43126	48784	54153	59232	64018	68511	72708	76610	80214	83	
36	43223	48876	54240	59314	64095	68583	72776	76672	80271	83	
37	1943319	1948968	1954327	1959396	1964173	1968656	1972843	1976735	1980329	1983	
38	43416	49060	54414	59478	64250	68728	72911	76797	80386	83	
39	43512	49151	54501	59560	64327	68800	72978	76859	80443	83	
40	1943609	1949243	1954588	1959642	1964404	1968872	1973045	1976922	1980501	1983	
41	43705	49334	54674	59724	64481	68944	73112	76984	80558	83	
42	43801	49426	54761	59805	64557	69016	73179	77046	80615	83	
43	1943897	1949517	1954847	1959887	1964634	1969088	1973246	1977108	1980672	1983	
44	43993	49608	54934	59968	64711	69159	73313	77169	80729	83	
45	44089	49699	55020	60050	64787	69231	73379	77231	80785	83	
46	1944185	1949790	1955106	1960131	1964864	1969302	1973446	1977293	1980842	1984	
47	44281	49881	55192	60213	64940	69374	73512	77354	80899	84	
48	44376	49972	55278	60294	65016	69445	73579	77416	80955	84	
49	1944472	1950063	1955364	1960375	1965093	1969517	1973645	1977477	1981012	1984	
50	44568	50154	55450	60456	65169	69588	73712	77539	81068	84	
51	44663	50244	55536	60537	65245	69659	73778	77600	81124	84	
52	1944758	1950335	1955622	1960618	1965321	1969730	1973844	1977661	1981181	1984	
53	44854	50425	55707	60698	65397	69801	73910	77722	81237	84	
54	44949	50516	55793	60779	65473	69872	73976	77783	81293	84	
55	1945044	1950606	1955879	1960860	1965548	1969943	1974042	1977844	1981349	1984	
56	45139	50696	55964	60940	65624	70014	74108	77905	81405	84	
57	45234	50787	56049	61021	65700	70084	74173	77966	81460	84	
58	1945329	1950877	1956135	1961101	1965775	1970155	1974239	1978026	1981516	1984	
59	45424	50967	56220	61182	65850	70225	74305	78087	81572	84	
60	45519	51057	56305	61262	65926	70296	74370	78148	81627	84	

Parts for Seconds.

(v.)

160°	161°	162°	163°	164°	165°	166°	167°	168°	169°	170°	
30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'
2	2	2	1	1	1	1	1	1	1	1	1
3	3	3	3	3	3	3	2	2	2	2	2
5	5	5	4	4	4	4	3	3	3	3	3
7	6	6	6	6	5	5	5	4	4	4	3
8	8	8	7	7	7	6	6	5	5	5	4
10	10	9	9	9	8	8	7	7	6	6	5
12	11	11	10	10	9	9	8	8	7	7	6
13	13	13	12	12	11	11	10	10	9	8	8
15	15	14	14	13	13	12	11	11	10	9	8
17	16	16	15	15	14	14	13	13	12	11	10
18	18	17	16	16	15	15	14	14	13	12	11
20	19	19	18	17	17	16	15	15	14	13	12
22	21	21	20	19	18	18	17	16	15	14	13
23	23	22	22	21	20	20	19	18	17	16	15
25	24	24	23	22	21	21	20	19	18	17	16
27	26	25	24	23	22	21	20	19	18	17	16
28	28	27	26	25	24	23	22	21	20	19	18
30	29	28	27	26	25	24	23	22	21	20	19
32	31	30	29	28	27	26	25	24	23	22	21
33	32	31	30	29	28	27	26	25	24	23	22
35	34	33	32	31	30	29	28	27	26	25	24
36	36	35	34	33	32	31	30	29	28	27	26
38	37	36	35	34	33	32	31	30	29	28	27
40	39	38	37	36	35	34	33	32	31	30	29
41	40	39	38	37	36	35	34	33	32	31	30
42	41	40	39	38	37	36	35	34	33	32	31
44	43	42	41	40	39	38	37	36	35	34	33
45	44	43	42	41	40	39	38	37	36	35	34
47	46	45	44	43	42	41	40	39	38	37	36
49	47	46	45	44	43	42	41	40	39	38	37
50	49	48	47	46	45	44	43	42	41	40	39
52	51	49	48	47	46	45	44	43	42	41	40
53	52	51	49	48	47	46	45	44	43	42	41
55	54	52	51	50	48	47	46	45	44	43	42
57	55	54	52	51	50	48	47	46	45	44	43
58	57	55	54	52	51	50	48	47	46	45	44
60	58	57	55	54	52	51	49	48	46	45	44
61	60	58	57	55	54	52	51	49	48	46	45
63	62	60	58	57	55	54	52	50	49	47	46
65	63	62	60	58	57	55	53	52	50	49	47
66	65	63	61	60	58	56	55	53	51	50	48
68	66	65	63	61	60	58	56	54	53	51	49
70	68	66	65	63	61	59	57	56	54	52	50
71	69	68	66	64	62	61	59	57	55	53	52
73	71	69	67	66	64	62	60	58	56	55	53
74	73	71	69	67	65	63	61	59	57	55	53
76	74	72	70	69	67	65	63	61	59	57	55
78	76	74	72	70	68	66	64	62	60	58	56
79	77	75	73	71	69	68	65	63	61	59	57
80	79	77	75	73	71	69	67	65	63	61	59
83	80	78	76	74	72	70	68	66	64	62	60
84	82	80	78	76	74	72	69	67	65	63	61
86	84	82	79	77	75	73	71	69	67	64	62
87	85	83	80	79	77	74	72	70	68	66	63
89	87	85	82	80	78	76	73	71	69	67	65
91	88	86	84	82	79	77	74	72	70	68	66
92	90	88	85	83	81	78	76	74	72	69	67
94	92	89	87	85	82	80	77	75	73	70	68
95	93	91	88	86	84	81	79	76	74	72	69
97	95	92	90	87	85	83	80	78	75	73	70

(v.)

Nat. Versines.

	170°	171°	172°	173°	174°	175°	176°	177°	178°	179°	
0	1984808	1987688	1990268	1992546	1994522	1996193	1997564	1998630	1999391	1999848	0
1	1984858	1987734	1990309	1992582	1994552	1996220	1997584	1998645	1999401	1999853	1
2	84909	87779	90349	92617	94583	96245	97605	98660	99411	99858	2
3	84959	87825	90389	92652	94613	96270	97625	98675	99421	99863	3
4	1985009	1987870	1990429	1992687	1994643	1996295	1997645	1998690	1999431	1999867	4
5	85059	87915	90469	92722	94673	96320	97665	98705	99441	99872	5
6	85109	87960	90510	92757	94703	96345	97684	98719	99450	99877	6
7	1985159	1988005	1990549	1992792	1994733	1996370	1997704	1998734	1999460	1999881	7
8	85209	88050	90589	92827	94763	96395	97724	98749	99469	99886	8
9	85259	88095	90629	92862	94792	96420	97743	98763	99479	99890	9
10	1985309	1988139	1990669	1992896	1994822	1996444	1997763	1998778	1999488	1999894	10
11	85358	88184	90708	92931	94851	96469	97782	98792	99497	99898	11
12	85408	88228	90748	92966	94881	96493	97802	98806	99507	99903	12
13	1985457	1988273	1990787	1993000	1994910	1996517	1997821	1998820	1999516	1999907	13
14	85507	88317	90827	93034	94939	96541	97840	98834	99525	99911	14
15	85556	88362	90866	93069	94969	96566	97859	98848	99534	99914	15
16	1985605	1988406	1990905	1993103	1994998	1996590	1997878	1998862	1999542	1999918	16
17	85654	88450	90944	93137	95027	96614	97897	98876	99551	99922	17
18	85704	88494	90983	93171	95056	96637	97916	98890	99560	99925	18
19	1985752	1988538	1991022	1993205	1995084	1996661	1997934	1998904	1999568	1999929	19
20	85801	88582	91061	93238	95113	96685	97953	98917	99577	99932	20
21	85850	88626	91100	93272	95142	96709	97972	98981	99585	99936	21
22	1985899	1988669	1991138	1993306	1995171	1996732	1997990	1998944	1999594	1999939	22
23	85948	88713	91177	93339	95199	96756	98008	98957	99602	99942	23
24	85996	88756	91216	93373	95227	96779	98027	98971	99610	99945	24
25	1986045	1988800	1991254	1993406	1995256	1996802	1998045	1998984	1999618	1999948	25
26	86093	88843	91292	93440	95284	96825	98063	98997	99626	99951	26
27	86141	88887	91331	93473	95312	96849	98081	99010	99634	99954	27
28	1986189	1988930	1991369	1993506	1995340	1996872	1998099	1999023	1999642	1999957	28
29	86238	88973	91407	93539	95368	96895	98117	99036	99650	99959	29
30	86286	89016	91445	93572	95396	96917	98135	99048	99657	99962	30
31	1986334	1989059	1991483	1993605	1995424	1996940	1998153	1999061	1999665	1999964	31
32	86382	89102	91521	93638	95452	96963	98170	99073	99672	99967	32
33	86429	89145	91558	93670	95480	96985	98188	99086	99680	99969	33
34	1986477	1989187	1991596	1993703	1995507	1997008	1998205	1999098	1999687	1999971	34
35	86525	89230	91634	93736	95535	97030	98223	99111	99694	99974	35
36	86572	89272	91671	93768	95562	97053	98240	99123	99702	99976	36
37	1986620	1989315	1991709	1993800	1995589	1997075	1998257	1999135	1999709	1999978	37
38	86667	89357	91746	93833	95617	97097	98274	99147	99716	99980	38
39	86714	89399	91783	93865	95644	97119	98291	99159	99722	99981	39
40	1986762	1989442	1991820	1993897	1995671	1997141	1998308	1999171	1999729	1999983	40
41	86809	89484	91857	93929	95698	97163	98325	99183	99736	99985	41
42	86856	89526	91894	93961	95725	97185	98342	99194	99743	99986	42
43	1986903	1989568	1991931	1993993	1995752	1997207	1998359	1999206	1999749	1999988	43
44	86950	89610	91968	94025	95778	97229	98375	99218	99756	99989	44
45	86996	89651	92005	94056	95805	97250	98392	99229	99762	99991	45
46	1987043	1989693	1992042	1994088	1995832	1997272	1998408	1999240	1999768	1999992	46
47	87090	89735	92078	94120	95858	97293	98425	99252	99775	99993	47
48	87136	89776	92115	94151	95884	97315	98441	99263	99781	99994	48
49	1987183	1989818	1992151	1994182	1995911	1997336	1998457	1999274	1999787	1999995	49
50	87229	89859	92187	94214	95937	97357	98473	99285	99793	99996	50
51	87275	89900	92224	94245	95963	97378	98489	99296	99799	99997	51
52	1987322	1989942	1992260	1994276	1995989	1997399	1998505	1999307	1999804	1999997	52
53	87368	89983	92296	94307	96015	97420	98521	99318	99810	99998	53
54	87414	90024	92332	94338	96041	97441	98537	99328	99816	99999	54
55	1987460	1990065	1992368	1994369	1996067	1997462	1998552	1999339	1999821	1999999	55
56	87506	90106	92404	94400	96093	97482	98568	99350	99827	99999	56
57	87551	90146	92439	94430	96118	97503	98584	99360	99832	2000000	57
58	1987597	1990187	1992475	1994461	1996144	1997523	1998599	1999370	1999837	2000000	58
59	87643	90228	92511	94491	96169	97544	98614	99381	99843	00000	59
60	87688	90268	92546	94522	96195	97564	98630	99391	99848	00000	60

Parts for Seconds.

(.)

	170°		171°		172°		173°		174°		175°		176°		177°		178°		179°		180°		
"	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	30'	0'	"	
1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	2	
3	3	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	0	0	0	0	0	3	
4	3	3	3	3	3	2	2	2	2	2	2	1	1	1	1	1	1	0	0	0	0	4	
5	4	4	4	4	4	3	3	3	3	3	2	2	2	1	1	1	1	1	0	0	0	5	
6	5	5	4	4	4	4	3	3	3	3	2	2	2	2	1	1	1	1	0	0	0	6	
7	6	6	5	5	5	4	4	4	3	3	3	3	2	2	2	1	1	1	1	0	0	7	
8	7	6	6	6	5	5	5	4	4	4	3	3	3	2	2	2	1	1	1	0	0	8	
9	8	7	7	6	6	6	5	5	4	4	4	3	3	3	2	2	1	1	1	0	0	9	
10	8	8	8	7	7	6	6	5	5	5	4	4	3	3	2	2	2	1	1	0	0	10	
11	9	9	8	8	7	7	6	6	5	5	4	4	3	3	2	2	2	1	1	0	0	11	
12	10	10	9	9	8	8	7	7	6	6	5	5	4	3	3	2	2	1	1	0	0	12	
13	11	10	10	9	9	8	8	7	7	6	5	5	4	4	3	3	2	2	1	0	0	13	
14	12	11	11	10	9	9	8	8	7	6	6	5	5	4	3	3	2	2	1	0	0	14	
15	13	12	11	11	10	9	9	8	8	7	6	6	5	4	4	3	2	2	1	1	0	15	
16	13	13	12	11	11	10	9	9	8	7	7	6	5	5	4	3	3	2	1	1	0	16	
17	14	14	13	12	11	11	10	9	9	8	7	6	6	5	4	4	3	2	1	1	0	17	
18	15	14	14	13	12	11	11	10	9	8	8	7	6	5	5	4	3	2	1	1	0	18	
19	16	15	14	14	13	12	11	10	10	9	8	7	6	6	5	4	3	2	2	1	0	19	
20	17	16	15	14	13	13	12	11	10	9	8	8	7	6	5	4	3	2	2	1	0	20	
21	18	17	16	15	14	13	12	11	11	10	9	8	7	6	5	4	3	3	2	1	0	21	
22	19	18	17	16	15	14	13	12	11	10	9	8	7	6	6	5	4	3	2	1	0	22	
23	19	18	17	16	15	14	13	12	11	10	9	8	7	6	6	5	4	3	2	1	0	23	
24	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	24	
25	21	20	19	18	17	16	15	14	13	12	11	9	8	7	6	5	4	3	2	1	0	25	
26	22	21	20	19	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	26
27	23	22	20	19	18	17	16	15	14	12	11	10	9	8	7	6	5	3	2	1	0	27	
28	24	22	21	20	19	18	16	15	14	13	12	11	9	8	7	6	5	3	2	1	0	28	
29	24	23	22	21	19	18	17	16	15	13	12	11	10	9	7	6	5	4	2	1	0	29	
30	25	24	23	21	20	19	18	16	15	14	13	11	10	9	8	6	5	4	2	1	0	30	
31	26	25	23	22	21	20	18	17	16	14	13	12	10	9	8	7	5	4	3	1	0	31	
32	27	26	24	23	22	20	19	17	16	15	13	12	11	9	8	7	5	4	3	1	0	32	
33	28	26	25	24	22	21	19	18	17	15	14	12	11	10	8	7	6	4	3	1	0	33	
34	29	27	26	24	23	21	20	19	17	16	14	13	11	10	9	7	6	4	3	1	0	34	
35	29	28	26	25	24	22	21	19	18	16	15	13	12	10	9	7	6	4	3	1	0	35	
36	30	29	27	26	24	23	21	20	18	17	15	14	12	11	9	8	6	5	3	1	0	36	
37	31	30	28	26	25	23	22	20	19	17	16	14	12	11	9	8	6	5	3	1	0	37	
38	32	30	29	27	26	24	22	21	19	18	16	14	13	11	10	8	6	5	3	2	0	38	
39	33	31	30	28	26	25	23	21	20	18	16	15	13	11	10	8	7	5	3	2	0	39	
40	34	32	30	29	27	25	24	22	20	18	17	15	13	12	10	8	7	5	3	2	0	40	
41	35	33	31	29	28	26	24	22	21	19	17	16	14	12	10	9	7	5	3	2	0	41	
42	35	34	32	30	28	27	25	23	21	19	18	16	14	12	11	9	7	5	3	2	0	42	
43	36	34	33	31	29	27	25	24	22	20	18	16	14	13	11	9	7	5	4	2	0	43	
44	37	35	33	31	30	28	26	24	22	20	19	17	15	13	11	9	7	6	4	2	0	44	
45	38	36	34	32	30	28	27	25	23	21	19	17	15	13	11	9	8	6	4	2	0	45	
46	39	37	35	33	31	29	27	25	23	21	19	17	16	14	12	10	8	6	4	2	0	46	
47	40	38	36	34	32	30	28	26	24	22	20	18	16	14	12	10	8	6	4	2	0	47	
48	40	38	36	34	32	30	28	26	24	22	20	18	16	14	12	10	8	6	4	2	0	48	
49	41	39	37	35	33	31	29	27	25	23	21	19	16	14	12	10	8	6	4	2	0	49	
50	42	40	38	36	34	32	29	27	25	23	21	19	17	15	13	10	8	6	4	2	0	50	
51	43	41	39	36	34	32	30	28	26	24	21	19	17	15	13	11	9	6	4	2	0	51	
52	44	42	39	37	35	33	31	28	26	24	22	20	18	15	13	11	9	7	4	2	0	52	
53	45	42	40	38	36	33	31	29	27	25	22	20	18	16	13	11	9	7	4	2	0	53	
54	45	43	41	39	36	34	32	30	27	25	23	20	18	16	14	11	9	7	4	2	0	54	
55	46	44	42	39	37	35	32	30	28	25	23	21	19	16	14	12	9	7	5	2	0	55	
56	47	45	42	40	38	35	33	31	28	26	24	21	19	17	14	12	9	7	5	2	0	56	
57	48	46	43	41	38	36	34	31	29	26	24	22	19	17	14	12	10	7	5	2	0	57	
58	49	46	44	42	39	37	34	32	29	27	24	22	20	17	15	12	10	7	5	2	0	58	
59	50	47	45	42	40	37	35	32	30	27	25	22	20	17	15	12	10	7	5	2	0	59	
60	50	48	45	43	40	38	35	33	30	28	25	23	20	18	15	13	10	8	5	2	0	60	

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (4° and 5°)

App Alt.	Minutes of Moon's Hor. Parallax.												Result of R. P.
	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	
4	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	
0'	42 1	1 17 43 1	1 20 44 1	1 23 45 0	1 26 46 0	1 29 47 0	1 32 48 0	1 34 49 0	1 37 49 0	1 39 50 0	1 42 51 0	1 45 52 0	1 48 53 0
2	42 5	1 18 43 5	1 21 44 5	1 24 45 4	1 27 46 4	1 30 47 4	1 33 48 4	1 36 49 4	1 39 49 4	1 42 50 4	1 45 51 4	1 48 52 4	1 51 53 4
4	42 9	1 19 43 9	1 22 44 9	1 25 45 9	1 28 46 8	1 31 47 8	1 34 48 8	1 37 49 8	1 40 49 8	1 43 50 8	1 46 51 8	1 49 52 8	1 52 53 8
6	42 13	1 20 43 13	1 23 44 13	1 26 45 13	1 29 46 12	1 32 47 12	1 35 48 12	1 38 49 12	1 41 49 12	1 44 50 12	1 47 51 12	1 50 52 12	1 53 53 12
8	42 17	1 21 43 17	1 24 44 17	1 27 45 17	1 30 46 17	1 33 47 16	1 36 48 16	1 39 49 16	1 42 49 16	1 45 50 16	1 48 51 16	1 51 52 16	1 54 53 16
10	42 21	1 22 43 21	1 25 44 21	1 28 45 21	1 31 46 21	1 34 47 20	1 37 48 20	1 40 49 20	1 43 49 20	1 46 50 20	1 49 51 20	1 52 52 20	1 55 53 20
12	42 25	1 23 43 25	1 27 44 25	1 29 45 25	1 32 46 25	1 35 47 24	1 38 48 24	1 41 49 24	1 44 49 24	1 47 50 24	1 50 51 24	1 53 52 24	1 56 53 24
14	42 29	1 25 43 29	1 28 44 29	1 31 45 29	1 34 46 29	1 37 47 29	1 40 48 28	1 43 49 28	1 46 49 28	1 49 50 28	1 52 51 28	1 55 52 28	1 58 53 28
16	42 33	1 26 43 33	1 29 44 33	1 32 45 33	1 35 46 33	1 38 47 33	1 41 48 32	1 44 49 32	1 47 49 32	1 50 50 32	1 53 51 32	1 56 52 32	1 59 53 32
18	42 37	1 27 43 37	1 30 44 37	1 33 45 37	1 36 46 37	1 39 47 37	1 42 48 37	1 45 49 37	1 48 49 37	1 51 50 37	1 54 51 37	1 57 52 37	1 60 53 37
20	42 41	1 28 43 41	1 31 44 41	1 34 45 41	1 37 46 41	1 40 47 41	1 43 48 41	1 46 49 41	1 49 49 41	1 52 50 41	1 55 51 41	1 58 52 41	1 61 53 41
22	42 45	1 29 43 45	1 32 44 45	1 35 45 45	1 38 46 45	1 41 47 44	1 44 48 44	1 47 49 44	1 50 49 44	1 53 50 44	1 56 51 44	1 59 52 44	1 62 53 44
24	42 49	1 30 43 49	1 33 44 49	1 36 45 49	1 39 46 49	1 42 47 48	1 45 48 48	1 49 49 48	1 52 49 48	1 55 50 48	1 58 51 48	1 61 52 48	1 64 53 48
26	42 52	1 31 43 52	1 34 44 52	1 37 45 52	1 40 46 52	1 43 47 52	1 47 48 52	1 50 49 52	1 53 49 52	1 56 50 52	1 59 51 52	1 62 52 52	1 65 53 52
28	42 56	1 32 43 56	1 35 44 56	1 38 45 56	1 41 46 56	1 45 47 55	1 48 48 55	1 51 49 55	1 54 49 55	1 57 50 55	1 60 51 55	1 63 52 55	1 66 53 55
30	43 0	1 33 44 0	1 36 45 0	1 39 46 0	1 43 46 59	1 46 47 59	1 49 48 59	1 52 49 59	1 55 49 59	1 58 50 59	1 61 51 59	1 64 52 59	1 67 53 59
32	43 3	1 34 44 3	1 37 45 3	1 41 46 3	1 44 47 3	1 47 48 3	1 50 49 3	1 53 50 3	1 56 50 3	1 59 51 3	1 62 52 3	1 65 53 3	1 68 54 3
34	43 7	1 35 44 7	1 38 45 7	1 42 46 7	1 45 47 6	1 48 48 6	1 51 49 6	1 55 50 6	1 58 50 6	1 61 51 6	1 64 52 6	1 67 53 6	1 70 54 6
36	43 11	1 36 44 11	1 40 45 10	1 43 46 10	1 46 47 10	1 49 48 10	1 52 49 10	1 56 50 10	1 59 50 10	1 62 51 10	1 65 52 10	1 68 53 10	1 71 54 10
38	43 14	1 37 44 14	1 41 45 14	1 44 46 14	1 47 47 14	1 50 48 13	1 54 49 13	1 57 50 13	1 60 50 13	1 63 51 13	1 66 52 13	1 69 53 13	1 72 54 13
40	43 18	1 38 44 18	1 42 45 18	1 45 46 17	1 48 47 17	1 51 48 17	1 55 49 17	1 58 50 17	1 61 50 17	1 64 51 17	1 67 52 17	1 70 53 17	1 73 54 17
42	43 21	1 39 44 21	1 43 45 21	1 46 46 21	1 49 47 21	1 53 48 20	1 56 49 20	1 59 50 20	1 62 50 20	1 65 51 20	1 68 52 20	1 71 53 20	1 74 54 20
44	43 24	1 41 44 24	1 44 45 24	1 47 46 24	1 50 47 24	1 54 48 24	1 57 49 23	1 60 50 23	1 63 50 23	1 66 51 23	1 69 52 23	1 72 53 23	1 75 54 23
46	43 28	1 42 44 28	1 45 45 27	1 48 46 27	1 52 47 27	1 55 48 27	1 58 49 27	1 61 50 27	1 64 50 27	1 67 51 27	1 70 52 27	1 73 53 27	1 76 54 27
48	43 31	1 43 44 31	1 46 45 31	1 49 46 30	1 53 47 30	1 56 48 30	1 59 49 30	1 62 50 30	1 65 50 30	1 68 51 30	1 71 52 30	1 74 53 30	1 77 54 30
50	43 34	1 44 44 34	1 47 45 34	1 50 46 34	1 54 47 33	1 57 48 33	1 60 49 33	1 63 50 33	1 66 50 33	1 69 51 33	1 72 52 33	1 75 53 33	1 78 54 33
52	43 37	1 45 44 37	1 48 45 37	1 52 46 37	1 55 47 37	1 58 48 36	1 61 49 36	1 64 50 36	1 67 50 36	1 70 51 36	1 73 52 36	1 76 53 36	1 79 54 36
54	43 41	1 46 44 40	1 49 45 40	1 53 46 40	1 56 47 40	1 59 48 40	1 62 49 40	1 65 50 40	1 68 50 40	1 71 51 40	1 74 52 40	1 77 53 40	1 80 54 40
56	43 44	1 47 44 44	1 50 45 44	1 54 46 43	1 57 47 43	1 60 48 43	1 63 49 43	1 66 50 43	1 69 50 43	1 72 51 43	1 75 52 43	1 78 53 43	1 81 54 43
58	43 47	1 48 44 47	1 51 45 47	1 55 46 47	1 58 47 46	1 61 48 46	1 64 49 46	1 67 50 46	1 70 50 46	1 73 51 46	1 76 52 46	1 79 53 46	1 82 54 46
5°	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	
0'	43 50	1 49 44 50	1 52 45 50	1 56 46 50	1 59 47 50	2 3 48 49	2 6 49 49	2 10 50 49	2 13 51 49	2 16 52 49	2 19 53 49	2 23 54 49	2 26 55 49
2	43 53	1 50 44 53	1 54 45 53	1 57 46 53	2 1 47 53	2 4 48 52	2 8 49 52	2 11 50 52	2 15 51 52	2 18 52 52	2 22 53 52	2 25 54 52	2 29 55 52
4	43 56	1 51 44 56	1 55 45 56	1 58 46 56	2 2 47 55	2 5 48 55	2 9 49 55	2 12 50 55	2 16 51 55	2 19 52 55	2 23 53 55	2 26 54 55	2 30 55 55
6	43 59	1 52 44 59	1 56 45 59	1 59 46 59	2 3 47 58	2 6 48 58	2 10 49 58	2 14 50 58	2 17 51 58	2 21 52 58	2 24 53 58	2 28 54 58	2 31 55 58
8	44 2	1 53 45 2	1 57 46 2	2 0 47 1	2 4 48 1	2 8 49 1	2 11 50 1	2 15 51 1	2 18 52 1	2 22 53 1	2 25 54 1	2 29 55 1	2 32 56 1
10	44 5	1 54 45 5	1 58 46 5	2 2 47 4	2 5 48 4	2 9 49 4	2 12 50 4	2 16 51 4	2 20 52 4	2 23 53 4	2 27 54 4	2 30 55 4	2 34 56 4
12	44 8	1 55 45 8	1 59 46 8	2 3 47 7	2 6 48 7	2 10 49 7	2 14 50 7	2 17 51 7	2 21 52 7	2 24 53 7	2 28 54 7	2 31 55 7	2 35 56 7
14	44 11	1 56 45 11	2 0 46 10	2 4 47 10	2 7 48 10	2 11 49 10	2 15 50 10	2 18 51 10	2 22 52 10	2 25 53 10	2 29 54 10	2 32 55 10	2 36 56 10
16	44 14	1 58 45 14	2 1 46 13	2 5 47 13	2 9 48 13	2 12 49 13	2 16 50 13	2 20 51 13	2 23 52 13	2 27 53 13	2 30 54 13	2 34 55 13	2 37 56 13
18	44 17	1 59 45 17	2 2 46 16	2 6 47 16	2 10 48 16	2 13 49 16	2 17 50 16	2 21 51 16	2 24 52 16	2 28 53 16	2 31 54 16	2 35 55 16	2 38 56 16
20	44 20	2 0 45 19	2 3 46 19	2 7 47 19	2 11 48 19	2 14 49 19	2 18 50 19	2 22 51 19	2 25 52 19	2 29 53 19	2 32 54 19	2 36 55 19	2 39 56 19
22	44 22	2 1 45 23	2 4 46 22	2 8 47 22	2 12 48 22	2 16 49 22	2 19 50 22	2 23 51 22	2 27 52 22	2 30 53 22	2 34 54 22	2 37 55 22	2 41 56 22
24	44 25	2 2 45 25	2 6 46 25	2 9 47 24	2 13 48 24	2 17 49 24	2 21 50 24	2 24 51 24	2 28 52 24	2 31 53 24	2 35 54 24	2 38 55 24	2 42 56 24
26	44 27	2 3 45 28	2 7 46 27	2 10 47 27	2 14 48 27	2 18 49 27	2 22 50 27	2 25 51 27	2 29 52 27	2 32 53 27	2 36 54 27	2 39 55 27	2 43 56 27
28	44 31	2 4 45 31	2 8 46 30	2 12 47 30	2 15 48 30	2 19 49 29	2 23 50 29	2 27 51 29	2 31 52 29	2 34 53 29	2 38 54 29	2 41 55 29	2 45 56 29
30	44 33	2 5 45 33	2 9 46 33	2 13 47 33	2 17 48 33	2 20 49 32	2 24 50 32	2 28 51 32	2 32 52 32	2 35 53 32	2 39 54 32	2 42 55 32	2 46 56 32
32	44 36	2 6 45 36	2 10 46 36	2 14 47 35	2 18 48 35	2 21 49 35	2 25 50 34	2 29 51 34	2 33 52 34	2 36 53 34	2 40 54 34	2 43 55 34	2 47 56 34
34	44 39	2 7 45 39	2 11 46 38	2 15 47 38	2 19 48 38	2 23 49 37	2 26 50 37	2 30 51 37	2 34 52 37	2 37 53 37	2 41 54 37	2 44 55 37	2 48 56 37
36	44 42	2 8 45 41	2 12 46 41	2 16 47 41	2 20 48 40	2 24 49 40	2 28 50 40	2 31 51 40	2 35 52 40	2 38 53 40	2 42 54 40	2 45 55 40	2 49 56 40
38	44 44	2 9 45 44	2 13 46 44	2 17 47 43	2 21 48 43	2 25 49 43	2 29 50 43	2 33 51 43	2 37 52 43	2 40 53 43	2 44 54 43	2 47 55 43	2 51 56 43
40	44 47	2 10 45 47	2 14 46 46	2 18 47 46	2 22 48 45	2 26 49 45	2 30 50 45	2 34 51 45	2 38 52 45	2 41 53 45	2 45 54 45	2 48 55 45	2 52 56 45
42	44 49	2 12 45 49	2 15 46 49	2 19 47 48	2 23 48 48	2 27 49 48	2 31 50 48	2 35 51 48	2 39 52 48	2 42 53 48	2 46 54 48	2 49 55 48	2 53 56 48
44	44 52	2 13 45 51	2 17 46 51	2 21 47 51	2 24 48 51	2 28 49 50	2 32 50 50	2 36 51 50	2 40 52 50	2 43 53 50	2 47 54 50	2 50 55 50	2 54 56 50
46	44 54	2 14 45 54	2 18 46 54	2 22 47 53	2 26 48 53	2 30 49 53	2 34 50 53	2 38 51 53	2 42 52 53	2 45 53 53	2 49 54 53	2 52 55 53	2 56 56 53
48	44 57	2 15 45 56	2 19 46 56	2 23 47 56	2 27 48 55	2 31 49 55	2 35 50 55	2 39 51 55	2 43 52 55	2 46 53 55	2 50 54 55	2 53 55 55	2 57 56 55
50	44 59	2 16 45 59	2 20 46 58	2 24 47 58	2 28 48 58	2 32 49 57	2 36 50 57	2 40 51 57	2 44 52 57	2 47 53 57	2 51 54 57	2 54 55 57	2 58 56 57
52	45 1	2 17 46 1	2 21 47 1	2 25 48 0	2 29 49 0	2 33 50 0	2 37 51 0	2 41 52 0	2 45 53 0	2 48 54 0	2 52 55 0	2 55 56 0	2 59 57 0
54	45 4	2 18 46 3	2 22 47 3	2 26 48 3	2 30 49 3	2 34 50 2	2 38 51 2	2 42 52 2	2 46 53 2	2 49 54 2	2 53 55 2	2 56 56 2	2 60 57 2
56	45 6	2 19 46 6	2 23 47 6	2 27 48 5	2 31 49 5	2 35 50 5	2 39 51 4	2 43 52 4	2 47 53 4	2 50 54 4	2 54 55 4	2 57 56 4	2 61 57 4
58	45 9	2 20 46 8	2 24 47 8</										

(6° and 7°)		The Correction of the Moon's Altitude, and the Aux. Angle A.																(w.)	
App. Alt.	6°	Minutes of Moon's Hor. Parallax.																Seconds of H. P.	
		54'		55'		56'		57'		58'		59'		60'		61'		Cor.	A
		Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°		
0	45 11	2 21	46 11	2 25	47 10	2 30	48 10	2 34	49 10	2 38	50 10	2 42	51 9	2 46	52 9	2 50	53 0	1	0
2	45 13	2 22	46 13	2 26	47 12	2 31	48 12	2 35	49 12	2 39	50 12	2 43	51 11	2 47	52 11	2 51	54 0	2	0
4	45 15	2 23	46 15	2 28	47 15	2 32	48 14	2 36	49 14	2 40	50 14	2 44	51 13	2 48	52 13	2 52	55 0	3	0
6	45 17	2 25	46 17	2 29	47 17	2 33	48 16	2 37	49 16	2 41	50 16	2 45	51 15	2 49	52 15	2 54	56 0	4	0
8	45 19	2 26	46 19	2 30	47 19	2 34	48 18	2 38	49 18	2 42	50 18	2 46	51 17	2 51	52 17	2 55	58 0	5	0
10	45 21	2 27	46 21	2 31	47 21	2 35	48 20	2 39	49 20	2 43	50 20	2 48	51 20	2 52	52 19	2 56	60 0	6	0
12	45 24	2 28	46 23	2 32	47 23	2 36	48 23	2 40	49 22	2 45	50 22	2 49	51 22	2 53	52 21	2 57	62 0	7	0
14	45 25	2 29	46 25	2 33	47 25	2 37	48 25	2 42	49 24	2 46	50 24	2 50	51 24	2 54	52 23	2 59	64 0	8	0
16	45 28	2 30	46 27	2 34	47 27	2 38	48 27	2 43	49 26	2 47	50 26	2 51	51 26	2 55	52 25	3 0	66 0	9	0
18	45 30	2 31	46 30	2 35	47 29	2 39	48 29	2 44	49 29	2 48	50 28	2 52	51 28	2 57	52 27	3 1	68 0	10	0
20	45 32	2 32	46 32	2 36	47 31	2 41	48 31	2 45	49 31	2 49	50 30	2 53	51 30	2 58	52 30	3 2	70 0	11	0
22	45 34	2 33	46 34	2 37	47 33	2 42	48 33	2 46	49 33	2 50	50 32	2 55	51 32	2 59	52 32	3 3	72 0	12	0
24	45 36	2 34	46 36	2 38	47 35	2 43	48 35	2 47	49 35	2 52	50 34	2 56	51 34	3 0	52 34	3 4	74 0	13	0
26	45 38	2 35	46 38	2 40	47 37	2 44	48 37	2 48	49 37	2 53	50 36	2 57	51 36	3 1	52 36	3 5	76 0	14	0
28	45 40	2 36	46 40	2 41	47 39	2 45	48 39	2 49	49 39	2 54	50 38	2 58	51 38	3 2	52 38	3 6	78 0	15	0
30	45 42	2 37	46 42	2 42	47 41	2 46	48 41	2 51	49 40	2 55	50 40	2 59	51 40	3 3	52 40	3 7	80 0	16	0
32	45 44	2 38	46 44	2 43	47 43	2 47	48 43	2 52	49 42	2 56	50 42	3 0	51 42	3 4	52 42	3 8	82 0	17	0
34	45 46	2 40	46 46	2 44	47 45	2 48	48 45	2 53	49 44	2 57	50 44	3 1	51 44	3 5	52 44	3 9	84 0	18	0
36	45 48	2 41	46 48	2 45	47 47	2 50	48 47	2 54	49 46	2 58	50 46	3 2	51 46	3 6	52 46	3 10	86 0	19	0
38	45 50	2 42	46 50	2 46	47 49	2 51	48 49	2 55	49 48	3 0	50 48	3 3	51 48	3 7	52 48	3 11	88 0	20	0
40	45 52	2 43	46 52	2 47	47 51	2 52	48 51	2 56	49 50	3 1	50 50	3 4	51 50	3 8	52 50	3 12	90 0	21	0
42	45 54	2 44	46 54	2 48	47 53	2 53	48 53	2 57	49 52	3 2	50 52	3 5	51 52	3 9	52 52	3 13	92 0	22	0
44	45 56	2 45	46 56	2 49	47 55	2 54	48 55	2 58	49 54	3 3	50 54	3 6	51 54	3 10	52 54	3 14	94 0	23	0
46	45 57	2 46	46 57	2 50	47 57	2 55	48 57	3 0	49 56	3 4	50 56	3 7	51 56	3 11	52 56	3 15	96 0	24	0
48	45 59	2 47	46 59	2 51	47 59	2 56	48 59	3 1	49 58	3 5	50 58	3 8	51 58	3 12	52 58	3 16	98 0	25	0
50	46 1	2 48	47 0	2 52	48 0	2 57	49 0	3 2	49 59	3 6	50 59	3 9	51 59	3 13	52 59	3 17	100 0	26	0
52	46 3	2 49	47 2	2 53	48 2	2 58	49 1	3 3	50 1	3 7	51 1	4 0	52 1	3 14	53 1	3 18	102 0	27	0
54	46 4	2 50	47 4	2 54	48 4	2 59	49 3	3 4	50 3	3 8	51 3	4 1	52 3	3 15	53 3	3 19	104 0	28	0
56	46 6	2 51	47 6	2 55	48 6	3 0	49 5	3 5	50 5	3 9	51 5	4 2	52 5	3 16	53 5	3 20	106 0	29	0
58	46 8	2 52	47 8	2 56	48 8	3 1	49 7	3 6	50 7	4 0	51 7	4 3	52 7	3 17	53 7	3 21	108 0	30	0
7	54'	55'	56'	57'	58'	59'	60'	61'											
0	46 10	2 53	47 9	2 57	48 9	3 2	49 8	3 7	50 8	3 12	51 8	3 17	52 7	3 22	53 7	3 27	110 0	31	0
2	46 11	2 54	47 11	2 58	48 11	3 3	49 10	3 8	50 10	3 13	51 9	3 18	52 9	3 23	53 9	3 28	112 0	32	0
4	46 13	2 55	47 13	3 0	48 12	3 4	49 12	3 9	50 11	3 14	51 11	3 19	52 10	3 24	53 10	3 29	114 0	33	0
6	46 15	2 56	47 14	3 1	48 14	3 5	49 13	3 10	50 13	3 15	51 12	3 20	52 12	3 25	53 12	3 30	116 0	34	0
8	46 16	2 57	47 16	3 2	48 16	3 6	49 15	3 11	50 15	3 16	51 14	3 21	52 14	3 26	53 14	3 31	118 0	35	0
10	46 18	2 58	47 18	3 3	48 17	3 7	49 17	3 12	50 16	3 17	51 16	3 22	52 16	3 27	53 16	3 33	120 0	36	0
12	46 20	3 0	47 19	3 4	48 19	3 8	49 18	3 13	50 18	3 18	51 17	3 23	52 17	3 28	53 17	3 34	122 0	37	0
14	46 21	3 1	47 21	3 5	48 20	3 9	49 20	3 14	50 20	3 19	51 19	3 24	52 19	3 29	53 19	3 35	124 0	38	0
16	46 23	3 2	47 23	3 6	48 22	3 10	49 22	3 15	50 21	3 20	51 21	3 25	52 21	3 30	53 21	3 36	126 0	39	0
18	46 25	3 3	47 25	3 7	48 24	3 11	49 23	3 16	50 23	3 21	51 23	3 26	52 23	3 31	53 23	3 38	128 0	40	0
20	46 26	3 4	47 26	3 8	48 25	3 12	49 25	3 17	50 24	3 22	51 24	3 27	52 24	3 32	53 24	3 39	130 0	41	0
22	46 28	3 5	47 28	3 9	48 27	3 13	49 26	3 18	50 26	3 23	51 26	3 28	52 26	3 33	53 26	3 40	132 0	42	0
24	46 29	3 6	47 29	3 10	48 28	3 14	49 28	3 19	50 27	3 24	51 27	3 29	52 27	3 34	53 27	3 41	134 0	43	0
26	46 31	3 7	47 30	3 11	48 30	3 15	49 29	3 20	50 29	3 25	51 29	3 30	52 29	3 35	53 29	3 42	136 0	44	0
28	46 32	3 8	47 32	3 12	48 31	3 16	49 31	3 21	50 30	3 26	51 30	3 31	52 30	3 36	53 30	3 43	138 0	45	0
30	46 34	3 10	47 33	3 14	48 33	3 18	49 32	3 23	50 32	3 28	51 32	3 33	52 32	3 38	53 32	3 45	140 0	46	0
32	46 35	3 11	47 35	3 15	48 34	3 19	49 34	3 24	50 33	3 29	51 33	3 34	52 33	3 39	53 33	3 46	142 0	47	0
34	46 37	3 12	47 36	3 16	48 36	3 20	49 35	3 25	50 35	3 30	51 34	3 35	52 34	3 40	53 34	3 47	144 0	48	0
36	46 38	3 13	47 38	3 17	48 37	3 21	49 36	3 26	50 36	3 31	51 35	3 36	52 35	3 41	53 35	3 48	146 0	49	0
38	46 40	3 14	47 39	3 18	48 38	3 22	49 37	3 27	50 37	3 32	51 36	3 37	52 36	3 42	53 36	3 49	148 0	50	0
40	46 41	3 15	47 40	3 19	48 40	3 23	49 38	3 28	50 38	3 33	51 37	3 38	52 37	3 43	53 37	3 50	150 0	51	0
42	46 42	3 16	47 42	3 20	48 42	3 24	49 40	3 29	50 40	3 34	51 38	3 39	52 38	3 44	53 38	3 51	152 0	52	0
44	46 43	3 17	47 43	3 21	48 43	3 25	49 41	3 30	50 41	3 35	51 39	3 40	52 39	3 45	53 39	3 52	154 0	53	0
46	46 44	3 18	47 44	3 22	48 44	3 26	49 42	3 31	50 42	3 36	51 40	3 41	52 40	3 46	53 40	3 53	156 0	54	0
48	46 46	3 19	47 46	3 23	48 45	3 27	49 43	3 32	50 43	3 37	51 41	3 42	52 41	3 47	53 41	3 54	158 0	55	0
50	46 47	3 20	47 47	3 24	48 46	3 28	49 44	3 33	50 44	3 38	51 42	3 43	52 42	3 48	53 42	3 55	160 0	56	0
52	46 48	3 21	47 48	3 25	48 47	3 29	49 45	3 34	50 45	3 39	51 43	3 44	52 43	3 49	53 43	3 56	162 0	57	0
54	46 49	3 22	47 49	3 26	48 48	3 30	49 46	3 35	50 46	3 40	51 44	3 45	52 44	3 50	53 44	3 57	164 0	58	0
56	46 50	3 23	47 50	3 27	48 49	3 31	49 47	3 36	50 47	3 41	51 45	3 46	52 45	3 51	53 45	3 58	166 0	59	0
58	46 51	3 24	47 51	3 28	48 50	3 32	49 48	3 37	50 48	3 42	51 46	3 47	52 46	3 52	53 46	4 0	168 0	60	0

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (8° and 9°)

App Alt.	Minutes of Moon's Hor. Parallax.																Formula of L. F.
	54'		55'		56'		57'		58'		59'		60'		61'		
	8° Corr. +	A 60° +	Corr. +	A 60° +	Corr. +	A 60° +	Corr. +	A 60° +	Corr. +	A 60° +	Corr. +	A 60° +	Corr. +	A 60° +	Corr. +	A 60° +	
0'	46 54	3 26	47 54	3 31	48 53	3 36	49 53	3 42	50 52	3 47	51 51	3 52	52 51	3 58	53 50	4 3	1 1 6
2	46 55	3 27	47 55	3 32	48 54	3 38	49 54	3 43	50 53	3 48	51 53	3 54	52 52	3 59	53 51	4 4	2 2 6
4	46 57	3 28	47 56	3 33	48 55	3 39	49 55	3 44	50 54	3 49	51 54	3 55	52 53	4 0	53 53	4 6	3 3 6
6	46 58	3 29	47 57	3 34	48 57	3 40	49 56	3 45	50 55	3 51	51 55	3 56	52 54	4 1	53 54	4 7	4 4 6
8	46 59	3 30	47 58	3 36	48 58	3 41	49 57	3 46	50 56	3 52	51 56	3 57	52 55	4 2	53 55	4 8	5 5 6
10	47 0	3 31	47 59	3 37	48 59	3 42	49 58	3 47	50 57	3 53	51 57	3 58	52 56	4 3	53 56	4 9	6 6 6
12	47 1	3 32	48 0	3 38	49 0	3 43	49 59	3 49	50 58	3 54	51 58	3 59	52 58	4 4	53 57	4 10	7 7 6
14	47 2	3 33	48 1	3 39	49 1	3 44	50 0	3 50	50 59	3 55	51 59	4 1	52 59	4 5	53 58	4 12	8 8 6
16	47 3	3 34	48 2	3 40	49 2	3 45	50 2	3 51	51 0	3 56	52 0	4 2	53 0	4 6	53 59	4 13	9 9 6
18	47 4	3 36	48 3	3 41	49 3	3 47	50 3	3 52	51 1	3 57	52 1	4 3	53 1	4 7	54 0	4 14	10 10 6
20	47 6	3 37	48 5	3 42	49 4	3 48	50 4	3 53	51 3	3 59	52 3	4 4	53 2	4 10	54 1	4 15	11 11 6
22	47 7	3 38	48 6	3 43	49 6	3 49	50 5	3 54	51 4	4 0	52 4	4 5	53 3	4 11	54 2	4 16	12 12 6
24	47 8	3 39	48 7	3 44	49 7	3 50	50 6	3 55	51 5	4 1	52 5	4 6	53 4	4 12	54 3	4 17	13 13 6
26	47 9	3 40	48 8	3 45	49 8	3 51	50 7	3 57	51 6	4 2	52 6	4 7	53 5	4 13	54 4	4 18	14 14 6
28	47 10	3 41	48 9	3 47	49 9	3 52	50 8	3 58	51 8	4 3	52 7	4 8	53 6	4 14	54 5	4 19	15 15 6
30	47 11	3 42	48 11	3 48	49 10	3 53	50 9	3 59	51 9	4 4	52 8	4 10	53 7	4 15	54 6	4 20	16 16 6
32	47 12	3 43	48 12	3 49	49 11	3 54	50 10	4 0	51 10	4 5	52 9	4 11	53 8	4 16	54 7	4 21	17 17 6
34	47 14	3 44	48 13	3 50	49 12	3 55	50 11	4 1	51 11	4 6	52 10	4 12	53 9	4 17	54 8	4 22	18 18 6
36	47 15	3 45	48 14	3 51	49 13	3 57	50 12	4 2	51 12	4 7	52 11	4 13	53 10	4 18	54 9	4 23	19 19 6
38	47 16	3 46	48 15	3 52	49 14	3 58	50 13	4 3	51 13	4 8	52 12	4 14	53 11	4 19	54 10	4 24	20 20 6
40	47 17	3 47	48 16	3 53	49 15	3 59	50 14	4 4	51 14	4 10	52 13	4 15	53 12	4 20	54 11	4 25	21 21 6
42	47 18	3 48	48 17	3 54	49 16	4 0	50 15	4 5	51 15	4 11	52 14	4 16	53 13	4 21	54 12	4 26	22 22 6
44	47 19	3 50	48 18	3 55	49 17	4 1	50 16	4 6	51 16	4 12	52 15	4 17	53 14	4 22	54 13	4 27	23 23 6
46	47 20	3 51	48 19	3 56	49 18	4 2	50 17	4 7	51 17	4 13	52 16	4 18	53 15	4 23	54 14	4 28	24 24 6
48	47 21	3 52	48 20	3 57	49 19	4 3	50 18	4 8	51 18	4 14	52 17	4 19	53 16	4 24	54 15	4 29	25 25 6
50	47 22	3 53	48 21	3 59	49 20	4 4	50 19	4 9	51 19	4 15	52 18	4 20	53 17	4 25	54 16	4 30	26 26 6
52	47 23	3 54	48 22	4 0	49 21	4 5	50 20	4 10	51 20	4 16	52 19	4 21	53 18	4 26	54 17	4 31	27 27 6
54	47 24	3 55	48 23	4 1	49 22	4 6	50 21	4 11	51 21	4 17	52 20	4 22	53 19	4 27	54 18	4 32	28 28 6
56	47 25	3 56	48 24	4 2	49 23	4 7	50 22	4 12	51 22	4 18	52 21	4 23	53 20	4 28	54 19	4 33	29 29 6
58	47 26	3 57	48 25	4 3	49 24	4 8	50 23	4 13	51 23	4 19	52 22	4 24	53 21	4 29	54 20	4 34	30 30 6
9°	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	58'	59'	60'	61'	54'
0'	47 27	3 58	48 26	4 4	49 26	4 10	50 25	4 16	51 24	4 22	52 23	4 28	53 23	4 34	54 22	4 40	31 31 6
2	47 28	3 59	48 27	4 5	49 27	4 11	50 26	4 17	51 25	4 23	52 24	4 29	53 24	4 35	54 23	4 41	32 32 6
4	47 29	4 0	48 28	4 6	49 28	4 12	50 27	4 18	51 26	4 24	52 25	4 30	53 25	4 36	54 24	4 42	33 33 6
6	47 30	4 1	48 29	4 7	49 29	4 13	50 28	4 19	51 27	4 25	52 26	4 31	53 26	4 37	54 25	4 43	34 34 6
8	47 31	4 2	48 30	4 8	49 30	4 14	50 29	4 20	51 28	4 26	52 27	4 32	53 27	4 38	54 26	4 44	35 35 6
10	47 32	4 3	48 31	4 10	49 30	4 16	50 30	4 22	51 29	4 28	52 28	4 34	53 27	4 40	54 27	4 45	36 36 6
12	47 33	4 4	48 32	4 11	49 31	4 17	50 31	4 23	51 30	4 29	52 29	4 35	53 28	4 41	54 28	4 46	37 37 6
14	47 34	4 5	48 33	4 12	49 32	4 18	50 32	4 24	51 31	4 30	52 30	4 36	53 29	4 42	54 29	4 47	38 38 6
16	47 35	4 6	48 34	4 13	49 33	4 19	50 33	4 25	51 32	4 31	52 31	4 37	53 30	4 43	54 30	4 48	39 39 6
18	47 36	4 8	48 35	4 14	49 34	4 20	50 34	4 26	51 33	4 32	52 32	4 38	53 31	4 44	54 31	4 49	40 40 6
20	47 37	4 9	48 36	4 15	49 35	4 21	50 35	4 27	51 34	4 33	52 33	4 39	53 32	4 45	54 32	4 50	41 41 6
22	47 38	4 10	48 37	4 16	49 36	4 22	50 36	4 28	51 35	4 34	52 34	4 40	53 33	4 46	54 33	4 51	42 42 6
24	47 39	4 11	48 38	4 17	49 37	4 23	50 36	4 29	51 35	4 35	52 35	4 41	53 34	4 47	54 34	4 52	43 43 6
26	47 39	4 12	48 39	4 18	49 38	4 25	50 37	4 31	51 36	4 37	52 35	4 43	53 35	4 49	54 34	4 53	44 44 6
28	47 40	4 13	48 39	4 19	49 39	4 26	50 38	4 32	51 37	4 38	52 36	4 44	53 35	4 50	54 35	4 54	45 45 6
30	47 41	4 14	48 40	4 20	49 39	4 27	50 39	4 33	51 38	4 39	52 37	4 45	53 36	4 51	54 35	4 55	46 46 6
32	47 42	4 15	48 41	4 22	49 40	4 28	50 39	4 34	51 38	4 40	52 38	4 46	53 37	4 52	54 36	4 56	47 47 6
34	47 43	4 16	48 42	4 23	49 41	4 29	50 40	4 35	51 39	4 41	52 38	4 47	53 38	4 53	54 37	4 57	48 48 6
36	47 43	4 16	48 43	4 24	49 42	4 30	50 41	4 36	51 40	4 43	52 39	4 48	53 38	4 54	54 38	4 58	49 49 6
38	47 44	4 17	48 43	4 25	49 42	4 31	50 42	4 37	51 41	4 44	52 40	4 49	53 39	4 55	54 38	4 59	50 50 6
40	47 45	4 18	48 44	4 26	49 43	4 32	50 43	4 38	51 41	4 45	52 41	4 51	53 40	4 56	54 39	5 0	51 51 6
42	47 46	4 19	48 45	4 27	49 44	4 33	50 44	4 39	51 42	4 46	52 41	4 52	53 40	4 57	54 40	5 1	52 52 6
44	47 46	4 20	48 45	4 28	49 45	4 35	50 44	4 40	51 43	4 47	52 42	4 53	53 41	4 58	54 41	5 2	53 53 6
46	47 47	4 21	48 46	4 29	49 45	4 36	50 44	4 41	51 43	4 48	52 43	4 54	53 42	4 59	54 41	5 3	54 54 6
48	47 48	4 22	48 47	4 30	49 46	4 37	50 45	4 42	51 44	4 49	52 43	4 55	53 42	4 59	54 42	5 4	55 55 6
50	47 48	4 23	48 47	4 31	49 46	4 38	50 46	4 43	51 44	4 50	52 44	4 56	53 43	4 59	54 42	5 5	56 56 6
52	47 49	4 24	48 48	4 33	49 47	4 39	50 46	4 45	51 45	4 52	52 45	4 58	53 44	4 59	54 43	5 6	57 57 6
54	47 50	4 25	48 49	4 34	49 48	4 40	50 47	4 47	51 46	4 53	52 45	4 59	53 44	4 59	54 43	5 7	58 58 6
56	47 50	4 26	48 49	4 35	49 49	4 41	50 48	4 48	51 47	4 54	52 46	4 59	53 45	4 59	54 44	5 8	59 59 6
58	47 51	4 27	48 50	4 36	49 49	4 42	50 48	4 49	51 47	4 55	52 47	4 59	53 46	4 59	54 45	5 9	60 60 6

10° and 11° The Correction of the Moon's Altitude, and the Aux. Angle A. (w.)

P.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.	
	54'		55'		56'		57'		58'		59'		60'		61'		"	"
	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A
0	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°		
0	17 52	4 30 48 51	4 37	49 50	4 43	50 49	4 50	51 48	4 56	52 47	5	3 53 46	5	9 54 45	5 16	1 1 0	1	0
2	17 52	4 31 48 51	4 38	49 51	4 45	50 50	4 51	51 49	4 58	52 48	5	4 53 47	5	11 54 46	5 17	2 2 0	2	0
4	17 53	4 33 48 52	4 39	49 51	4 46	50 50	4 52	51 49	4 59	52 48	5	5 53 48	5	12 54 47	5 18	3 3 0	3	0
6	17 54	4 34 48 53	4 40	49 52	4 47	50 51	4 53	51 50	5	0 52 49	5	6 53 48	5	13 54 47	5 20	4 4 0	4	0
8	17 54	4 35 48 53	4 41	49 52	4 48	50 52	4 54	51 51	5	1 52 50	5	8 53 49	5	14 54 48	5 21	5 5 1	5	1
10	17 55	4 36 48 54	4 42	49 53	4 49	50 52	4 55	51 51	5	2 52 50	5	9 53 49	5	15 54 49	5 22	6 6 1	6	1
12	17 56	4 37 48 55	4 43	49 54	4 50	50 53	4 57	51 52	5	3 52 51	5	10 53 50	5	16 54 49	5 23	7 7 1	7	1
14	17 56	4 38 48 55	4 44	49 54	4 51	50 54	4 58	51 53	5	4 52 52	5	11 53 51	5	17 54 50	5 24	8 8 1	8	1
16	17 57	4 39 48 56	4 46	49 55	4 52	50 54	4 59	51 53	5	5 52 52	5	12 53 51	5	18 54 50	5 26	9 9 1	9	1
18	17 58	4 40 48 57	4 47	49 56	4 53	50 55	5	0 51 54	5	6 52 53	5	13 53 52	5	19 54 51	5 27	10 10 1	10	1
20	17 58	4 41 48 57	4 48	49 56	4 54	50 55	5	1 51 54	5	7 52 54	5	14 53 53	5	20 54 51	5 28	11 11 1	11	1
22	17 59	4 42 48 58	4 49	49 57	4 56	50 56	5	2 51 55	5	8 52 54	5	15 53 53	5	21 54 52	5 29	12 12 1	12	1
24	18 0	4 43 48 59	4 50	49 58	4 57	50 57	5	3 51 56	5	9 52 55	5	16 53 53	5	22 54 52	5 30	13 13 2	13	2
26	18 0	4 44 48 59	4 51	49 58	4 58	50 57	5	4 51 56	5	10 52 55	5	17 53 54	5	23 54 53	5 31	14 14 2	14	2
28	18 1	4 45 49 0	4 52	49 59	4 59	50 58	5	5 51 57	5	11 52 56	5	18 53 54	5	24 54 54	5 32	15 15 2	15	2
30	18 1	4 46 49 1	4 53	50 0	5	0 50 59	5	6 51 57	5	12 52 56	5	19 53 55	5	25 54 54	5 33	16 16 2	16	2
32	18 2	4 47 49 1	4 54	50 0	5	1 50 59	5	7 51 58	5	13 52 57	5	20 53 56	5	26 54 55	5 34	17 17 2	17	2
34	18 3	4 48 49 2	4 55	50 1	5	2 51 0	5	8 51 59	5	14 52 57	5	21 53 56	5	27 54 55	5 35	18 18 2	18	2
36	18 4	4 50 49 3	4 56	50 2	5	3 51 1	5	9 51 59	5	15 52 57	5	22 53 57	5	28 54 56	5 36	19 19 2	19	2
38	18 4	4 51 49 3	4 58	50 2	5	4 51 1	5	10 52 0	5	16 52 58	5	23 53 57	5	29 54 56	5 37	20 20 2	20	2
40	18 5	4 52 49 4	4 59	50 3	5	5 51 2	5	11 52 0	5	17 52 59	5	24 53 58	5	30 54 57	5 38	21 21 3	21	3
42	18 5	4 53 49 4	5	0 50 3	5	6 51 2	5	12 52 1	5	18 52 59	5	25 53 58	5	31 54 57	5 39	22 22 3	22	3
44	18 6	4 54 49 5	5	1 50 4	5	7 51 3	5	13 52 1	5	19 53 0	5	26 53 59	5	32 54 57	5 40	23 23 3	23	3
46	18 6	4 55 49 5	5	2 50 4	5	8 51 3	5	14 52 2	5	20 53 0	5	27 53 59	5	33 54 58	5 41	24 24 3	24	3
48	18 7	4 56 49 6	5	3 50 5	5	9 51 3	5	15 52 2	5	21 53 0	5	28 53 59	5	34 54 58	5 42	25 25 3	25	3
50	18 7	4 57 49 6	5	4 50 6	5	10 51 4	5	16 52 2	5	22 53 1	5	29 54 0	5	35 54 59	5 43	26 26 3	26	3
52	18 8	4 58 49 7	5	5 50 6	5	11 51 4	5	17 52 3	5	23 53 1	5	30 54 0	5	36 54 59	5 44	27 27 3	27	3
54	18 8	4 59 49 7	5	6 50 7	5	12 51 5	5	18 52 3	5	24 53 2	5	31 54 1	5	37 54 59	5 45	28 28 3	28	3
56	18 9	5 0 49 8	5	7 50 7	5	13 51 6	5	19 52 4	5	25 53 2	5	32 54 1	5	38 55 0	5 46	29 29 3	29	3
58	18 9	5 1 49 9	5	8 50 8	5	14 51 6	5	20 52 5	5	26 53 3	5	33 54 2	5	39 55 0	5 47	30 30 4	30	4
60	18 10	5 2 49 9	5	9 50 8	5	15 51 7	5	21 52 6	5	27 53 3	5	34 54 2	5	40 55 1	5 48	31 31 4	31	4
62	18 10	5 3 49 10	5	10 50 8	5	16 51 7	5	22 52 6	5	28 53 4	5	35 54 3	5	41 55 1	5 49	32 32 4	32	4
64	18 11	5 4 49 10	5	11 50 9	5	17 51 7	5	23 52 7	5	29 53 4	5	36 54 3	5	42 55 2	5 50	33 33 4	33	4
66	18 11	5 5 49 10	5	12 50 9	5	18 51 8	5	24 52 7	5	30 53 5	5	37 54 4	5	43 55 2	5 51	34 34 4	34	4
68	18 12	5 6 49 11	5	13 50 9	5	19 51 8	5	25 52 8	5	31 53 5	5	38 54 4	5	44 55 3	5 52	35 35 4	35	4
70	18 12	5 7 49 11	5	14 50 10	5	20 51 9	5	26 52 8	5	32 53 6	5	39 54 5	5	45 55 3	5 53	36 36 4	36	4
72	18 13	5 8 49 11	5	15 50 10	5	21 51 9	5	27 52 9	5	33 53 6	5	40 54 5	5	46 55 4	5 54	37 37 4	37	4
74	18 13	5 9 49 12	5	16 50 11	5	22 51 10	5	28 52 9	5	34 53 7	5	41 54 6	5	47 55 4	5 55	38 38 4	38	4
76	18 13	5 10 49 12	5	17 50 11	5	23 51 10	5	29 52 9	5	35 53 7	5	42 54 6	5	48 55 5	5 56	39 39 5	39	5
78	18 14	5 11 49 13	5	18 50 12	5	24 51 10	5	30 52 9	5	36 53 8	5	43 54 7	5	49 55 5	5 57	40 40 5	40	5
80	18 14	5 12 49 13	5	19 50 12	5	25 51 11	5	31 52 10	5	37 53 8	5	44 54 7	5	50 55 6	5 58	41 41 5	41	5
82	18 15	5 13 49 13	5	20 50 12	5	26 51 11	5	32 52 10	5	38 53 9	5	45 54 8	5	51 55 6	5 59	42 42 5	42	5
84	18 15	5 14 49 14	5	21 50 13	5	27 51 12	5	33 52 10	5	39 53 9	5	46 54 8	5	52 55 7	6 0	43 43 5	43	5
86	18 16	5 15 49 14	5	22 50 13	5	28 51 12	5	34 52 11	5	40 53 9	5	47 54 9	5	53 55 7	6 1	44 44 5	44	5
88	18 16	5 16 49 15	5	23 50 14	5	29 51 13	5	35 52 11	5	41 53 9	5	48 54 9	5	54 55 8	6 2	45 45 5	45	5
90	18 17	5 17 49 15	5	24 50 14	5	30 51 13	5	36 52 11	5	42 53 9	5	49 54 9	5	55 55 8	6 3	46 46 5	46	5
92	18 17	5 18 49 16	5	25 50 14	5	31 51 13	5	37 52 12	5	43 53 9	5	50 54 10	5	56 55 9	6 4	47 47 6	47	6
94	18 17	5 19 49 16	5	26 50 15	5	32 51 14	5	38 52 12	5	44 53 10	5	51 54 10	5	57 55 9	6 5	48 48 6	48	6
96	18 18	5 20 49 16	5	27 50 15	5	33 51 14	5	39 52 12	5	45 53 10	5	52 54 10	5	58 55 9	6 6	49 49 6	49	6
98	18 18	5 21 49 17	5	28 50 16	5	34 51 15	5	40 52 13	5	46 53 11	5	53 54 11	5	59 55 9	6 7	50 50 6	50	6
100	18 19	5 22 49 17	5	29 50 16	5	35 51 15	5	41 52 13	5	47 53 11	5	54 54 11	5	60 55 10	6 8	51 51 6	51	6
102	18 19	5 23 49 18	5	30 50 16	5	36 51 15	5	42 52 14	5	48 53 12	5	55 54 12	5	61 55 10	6 9	52 52 6	52	6
104	18 20	5 24 49 18	5	31 50 17	5	37 51 16	5	43 52 14	5	49 53 12	5	56 54 12	5	62 55 11	6 10	53 53 6	53	6
106	18 20	5 25 49 18	5	32 50 17	5	38 51 16	5	44 52 15	5	50 53 13	5	57 54 13	5	63 55 11	6 11	54 54 6	54	6
108	18 20	5 26 49 19	5	33 50 17	5	39 51 16	5	45 52 15	5	51 53 13	5	58 54 13	5	64 55 12	6 12	55 55 6	55	6
110	18 21	5 27 49 19	5	34 50 17	5	40 51 16	5	46 52 15	5	52 53 14	5	59 54 14	5	65 55 12	6 13	56 56 6	56	6
112	18 21	5 28 49 19	5	35 50 18	5	41 51 17	5	47 52 16	5	53 53 14	5	60 54 14	5	66 55 12	6 14	57 57 6	57	6
114	18 21	5 29 49 19	5	36 50 18	5	42 51 17	5	48 52 16	5	54 53 15	5	61 54 15	5	67 55 13	6 15	58 58 6	58	6
116	18 22	5 30 49 20	5	37 50 18	5	43 51 17	5	49 52 16	5	55 53 15	5	62 54 15	5	68 55 13	6 16	59 59 6	59	6
118	18 22	5 31 49 20	5	38 50 19	5	44 51 18	5	50 52 17	5	56 53 16	5	63 54 16	5</					

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (12° and 13°)																																		
App Alt.	Minutes of Moon's Hor. Parallax.																				Seconds of H. P.													
	54'				55'				56'				57'				58'				59'				60'				61'				"	Corr.
	12 ^o	Corr.	A	60 ^o	Corr.	A	60 ^o	Corr.	A	60 ^o	Corr.	A	60 ^o	Corr.	A	60 ^o	Corr.	A	60 ^o	Corr.	A	60 ^o	Corr.	A	60 ^o									
0'	48 22	5 34	49 21	5 42	50 19	5 50	51 18	5 57	52 17	6 5	53 15	6 13	54 14	6 20	55 13	6 28	56 12	6 35	57 11	6 42	58 10	6 49	59 09	7 0	59 38	7 1	59 67							
2	48 22	5 35	49 21	5 43	50 20	5 51	51 18	5 59	52 17	6 6	53 16	6 14	54 14	6 22	55 13	6 29	56 11	6 38	57 10	6 43	58 09	6 50	59 08	7 1	59 37	7 2	59 66							
4	48 23	5 36	49 21	5 44	50 20	5 52	51 19	6 0	52 17	6 7	53 16	6 15	54 15	6 23	55 13	6 31	56 10	6 39	57 09	6 44	58 08	6 51	59 07	7 2	59 36	7 3	59 65							
6	48 23	5 38	49 22	5 45	50 20	5 53	51 19	6 1	52 18	6 9	53 16	6 16	54 15	6 24	55 14	6 32	56 10	6 40	57 08	6 45	58 07	6 52	59 06	7 3	59 35	7 4	59 64							
8	48 23	5 39	49 22	5 46	50 21	5 54	51 19	6 2	52 18	6 10	53 17	6 17	54 15	6 25	55 14	6 33	56 10	6 41	57 07	6 46	58 06	6 53	59 05	7 4	59 34	7 5	59 63							
10	48 24	5 40	49 22	5 47	50 21	5 55	51 20	6 3	52 18	6 11	53 17	6 19	54 16	6 26	55 14	6 34	56 10	6 42	57 06	6 47	58 05	6 54	59 04	7 5	59 33	8 0	59 62							
12	48 24	5 41	49 23	5 49	50 21	5 56	51 20	6 4	52 19	6 12	53 17	6 20	54 16	6 28	55 15	6 36	56 10	6 43	57 05	6 48	58 04	6 55	59 03	8 0	59 32	8 1	59 61							
14	48 25	5 42	49 23	5 50	50 22	5 58	51 20	6 5	52 19	6 13	53 18	6 21	54 16	6 29	55 15	6 37	56 10	6 44	57 04	6 49	58 03	6 56	59 02	8 1	59 31	8 2	59 60							
16	48 25	5 43	49 23	5 51	50 22	5 59	51 21	6 6	52 19	6 14	53 18	6 22	54 16	6 30	55 15	6 38	56 10	6 45	57 03	6 50	58 02	6 57	59 01	8 2	59 30	8 3	59 59							
18	48 25	5 44	49 24	5 52	50 22	6 0	51 21	6 8	52 19	6 15	53 18	6 23	54 17	6 31	55 16	6 39	56 10	6 46	57 02	6 51	58 01	6 58	59 00	8 3	59 29	8 4	59 58							
20	48 25	5 45	49 24	5 53	50 22	6 1	51 21	6 9	52 20	6 17	53 18	6 24	54 17	6 32	55 16	6 40	56 10	6 47	57 01	6 52	58 00	6 59	58 59	8 4	59 28	8 5	59 57							
22	48 25	5 46	49 24	5 54	50 23	6 2	51 21	6 10	52 20	6 18	53 19	6 26	54 17	6 34	55 16	6 41	56 10	6 48	57 00	6 53	57 59	6 60	58 58	8 5	59 27	9 0	59 56							
24	48 26	5 47	49 24	5 55	50 23	6 3	51 22	6 11	52 20	6 19	53 19	6 27	54 18	6 35	55 16	6 43	56 10	6 49	57 00	6 54	57 58	6 61	58 57	9 0	59 26	9 1	59 55							
26	48 26	5 48	49 25	5 56	50 23	6 4	51 22	6 12	52 21	6 20	53 19	6 28	54 18	6 36	55 16	6 44	56 10	6 50	56 59	6 55	57 57	6 62	58 56	9 1	59 25	9 2	59 54							
28	48 26	5 49	49 25	5 57	50 24	6 5	51 22	6 13	52 21	6 21	53 19	6 29	54 18	6 37	55 17	6 45	56 10	6 51	56 58	6 56	57 56	6 63	58 55	9 2	59 24	9 3	59 53							
30	48 27	5 50	49 25	5 58	50 24	6 6	51 22	6 14	52 21	6 22	53 20	6 30	54 18	6 38	55 17	6 46	56 10	6 52	56 57	6 57	57 55	6 64	58 54	9 3	59 23	9 4	59 52							
32	48 27	5 51	49 26	5 59	50 24	6 7	51 23	6 15	52 21	6 23	53 20	6 31	54 19	6 39	55 17	6 47	56 10	6 53	56 56	6 58	57 54	6 65	58 53	9 4	59 22	9 5	59 51							
34	48 27	5 52	49 26	6 0	50 24	6 8	51 23	6 16	52 22	6 25	53 20	6 33	54 19	6 41	55 17	6 49	56 10	6 54	56 55	6 59	57 53	6 66	58 52	9 5	59 21	10 0	59 50							
36	48 28	5 53	49 26	6 1	50 25	6 10	51 23	6 18	52 22	6 26	53 20	6 34	54 19	6 42	55 18	6 50	56 10	6 55	56 54	6 60	57 52	6 67	58 51	10 0	59 20	10 1	59 49							
38	48 28	5 54	49 26	6 3	50 25	6 11	51 24	6 19	52 22	6 27	53 21	6 35	54 19	6 43	55 18	6 51	56 10	6 56	56 53	6 61	57 51	6 68	58 50	10 1	59 19	10 2	59 48							
40	48 28	5 55	49 27	6 4	50 25	6 12	51 24	6 20	52 22	6 28	53 21	6 36	54 19	6 44	55 18	6 52	56 10	6 57	56 52	6 62	57 50	6 69	58 49	10 2	59 18	10 3	59 47							
42	48 28	5 57	49 27	6 5	50 25	6 13	51 24	6 21	52 23	6 29	53 21	6 37	54 20	6 45	55 18	6 53	56 10	6 58	56 51	6 63	57 49	6 70	58 48	10 3	59 17	10 4	59 46							
44	48 29	5 58	49 27	6 6	50 26	6 14	51 24	6 22	52 23	6 30	53 21	6 38	54 20	6 46	55 18	6 54	56 10	6 59	56 50	6 64	57 48	6 71	58 47	10 4	59 16	10 5	59 45							
46	48 29	5 59	49 27	6 7	50 26	6 15	51 24	6 23	52 23	6 31	53 21	6 39	54 20	6 48	55 19	6 56	56 10	6 60	56 49	6 65	57 47	6 72	58 46	10 5	59 15	11 0	59 44							
48	48 29	6 0	49 28	6 8	50 26	6 16	51 25	6 24	52 23	6 32	53 22	6 41	54 20	6 49	55 19	6 57	56 10	6 61	56 48	6 66	57 46	6 73	58 45	11 0	59 14	11 1	59 43							
50	48 29	6 1	49 28	6 9	50 26	6 17	51 25	6 25	52 23	6 34	53 22	6 42	54 20	6 50	55 19	6 58	56 10	6 62	56 47	6 67	57 45	6 74	58 44	11 1	59 13	11 2	59 42							
52	48 29	6 2	49 28	6 10	50 26	6 18	51 25	6 27	52 23	6 35	53 22	6 43	54 21	6 51	55 19	6 59	56 10	6 63	56 46	6 68	57 44	6 75	58 43	11 2	59 12	11 3	59 41							
54	48 30	6 3	49 28	6 11	50 27	6 19	51 25	6 28	52 24	6 36	53 22	6 44	54 21	6 52	55 19	7 0	56 10	6 64	56 45	6 69	57 43	6 76	58 42	11 3	59 11	11 4	59 40							
56	48 30	6 4	49 28	6 12	50 27	6 20	51 25	6 29	52 24	6 37	53 22	6 45	54 21	6 54	55 19	7 1	56 10	6 65	56 44	6 70	57 42	6 77	58 41	11 4	59 10	11 5	59 39							
58	48 30	6 5	49 29	6 13	50 27	6 22	51 26	6 30	52 24	6 38	53 23	6 46	54 21	6 55	55 20	7 2	56 10	6 66	56 43	6 71	57 41	6 78	58 40	11 5	59 09	12 0	59 38							
13 ^o	54'	55'	56'	57'	58'	59'	60'	61'	62'	63'	64'	65'	66'	67'	68'	69'	70'	71'	72'	73'	74'	75'	76'	77'	78'	79'	80'							
0'	48 29	6 6	49 29	6 14	50 27	6 23	51 26	6 31	52 24	6 39	53 23	6 48	54 21	6 56	55 20	7 4	56 10	6 68	56 43	6 74	57 42	6 81	58 40	6 89	59 38	7 0	59 67							
2	48 30	6 7	49 29	6 15	50 27	6 24	51 26	6 32	52 24	6 40	53 23	6 49	54 21	6 57	55 20	7 5	56 10	6 69	56 42	6 75	57 41	6 82	58 39	6 90	59 37	7 1	59 66							
4	48 31	6 8	49 29	6 17	50 28	6 25	51 26	6 33	52 24	6 42	53 23	6 50	54 21	6 58	55 20	7 6	56 10	6 70	56 41	6 76	57 40	6 83	58 38	6 91	59 36	7 2	59 65							
6	48 31	6 9	49 29	6 18	50 28	6 26	51 26	6 34	52 25	6 43	53 23	6 51	54 22	6 59	55 20	7 8	56 10	6 71	56 40	6 77	57 39	6 84	58 37	6 92	59 35	7 3	59 64							
8	48 31	6 10	49 29	6 19	50 28	6 27	51 26	6 35	52 25	6 44	53 23	6 52	54 22	7 0	55 20	7 9	56 10	6 72	56 39	6 78	57 38	6 85	58 36	6 93	59 34	7 4	59 63							
10	48 31	6 11	49 30	6 20	50 28	6 28	51 26	6 37	52 25	6 45	53 23	6 53	54 22	7 1	55 20	7 10	56 10	6 73	56 38	6 79	57 37	6 86	58 35	6 94	59 33	7 5	59 62							
12	48 31	6 12	49 30	6 21	50 28	6 29	51 27	6 38	52 25	6 46	53 24	6 55	54 22	7 2	55 20	7 11	56 10	6 74	56 37	6 80	57 36	6 87	58 34	6 95	59 32	8 0	59 61							
14	48 32	6 14	49 30	6 22	50 28	6 30	51 27	6 39	52 25	6 47	53 24	6 56	54 22	7 3	55 21	7 13	56 10	6 75	56 36	6 81	57 35	6 88	58 33	6 96	59 31	8 1	59 60							
16	48 32	6 15	49 30	6 23	50 29	6 31	51 27	6 40	52 25	6 48	53 24	6 57	54 22	7 4	55 21	7 14	56 10	6 76	56 35	6 82	57 34	6 89	58 32	6 97	59 30	8 2	59 59							
18	48 32	6 16	49 30	6 24	50 29	6 33	51 27	6 41	52 26	6 50	53 24	6 58	54 22	7 5	55 21	7 15	56 10	6 77	56 34	6 83	57 33	6 90	58 31	6 98	59 29									

(14° and 15°) The Correction of the Moon's Altitude, and the Aux. Angle A.																		(w.)		
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.			
	54'		55'		56'		57'		58'		59'		60'		61'		n	s	A	
14°	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A				
	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"				
0'	48 35	6 38	49 33	6 47	50 31	6 56	51 29	7 4	52 28	7 13	53 26	7 22	54 24	7 31	55 22	7 40	1	1	0	
2	48 35	6 39	49 33	6 48	50 31	6 57	51 29	7 6	52 28	7 14	53 26	7 23	54 24	7 32	55 22	7 41	2	2	0	
4	48 35	6 40	49 33	6 49	50 31	6 58	51 30	7 7	52 28	7 16	53 26	7 24	54 24	7 33	55 22	7 42	3	3	0	
6	48 35	6 41	49 33	6 50	50 31	6 59	51 30	7 8	52 28	7 17	53 26	7 26	54 24	7 35	55 22	7 44	4	4	1	
8	48 35	6 42	49 33	6 51	50 32	7 0	51 30	7 9	52 28	7 18	53 26	7 27	54 24	7 36	55 22	7 45	5	5	1	
10	48 35	6 43	49 33	6 52	50 32	7 1	51 30	7 10	52 28	7 19	53 26	7 28	54 24	7 37	55 22	7 46	6	6	1	
12	48 35	6 44	49 33	6 53	50 32	7 2	51 30	7 11	52 28	7 20	53 26	7 29	54 24	7 38	55 22	7 47	7	7	1	
14	48 35	6 45	49 34	6 54	50 32	7 3	51 30	7 12	52 28	7 21	53 26	7 30	54 24	7 39	55 22	7 48	8	8	1	
16	48 35	6 46	49 34	6 55	50 32	7 4	51 30	7 13	52 28	7 22	53 26	7 31	54 24	7 40	55 22	7 49	9	9	1	
18	48 35	6 47	49 34	6 56	50 32	7 5	51 30	7 14	52 28	7 23	53 26	7 32	54 24	7 42	55 23	7 51	10	10	2	
20	48 36	6 48	49 34	6 57	50 32	7 6	51 30	7 15	52 28	7 25	53 26	7 34	54 24	7 43	55 23	7 52	11	11	2	
22	48 36	6 49	49 34	6 58	50 32	7 7	51 30	7 16	52 28	7 26	53 26	7 35	54 24	7 44	55 23	7 53	12	12	2	
24	48 36	6 50	49 34	7 0	50 32	7 8	51 30	7 17	52 28	7 27	53 26	7 36	54 24	7 45	55 23	7 54	13	13	2	
26	48 36	6 51	49 34	7 1	50 32	7 10	51 30	7 18	52 28	7 28	53 26	7 37	54 24	7 46	55 23	7 55	14	14	2	
28	48 36	6 53	49 34	7 2	50 32	7 11	51 30	7 20	52 28	7 29	53 26	7 38	54 24	7 47	55 23	7 57	15	15	2	
30	48 36	6 54	49 34	7 3	50 32	7 12	51 30	7 21	52 28	7 30	53 26	7 39	54 24	7 49	55 23	7 58	16	16	3	
32	48 36	6 55	49 34	7 4	50 32	7 13	51 30	7 22	52 28	7 31	53 26	7 41	54 24	7 50	55 23	7 59	17	17	3	
34	48 36	6 56	49 34	7 5	50 32	7 14	51 30	7 23	52 28	7 33	53 26	7 42	54 24	7 51	55 23	8 0	18	18	3	
36	48 36	6 57	49 34	7 6	50 32	7 15	51 30	7 24	52 28	7 34	53 26	7 43	54 24	7 52	55 23	8 1	19	19	3	
38	48 36	6 58	49 34	7 7	50 32	7 16	51 30	7 25	52 28	7 35	53 26	7 44	54 24	7 53	55 22	8 3	20	20	3	
40	48 36	6 59	49 34	7 8	50 32	7 17	51 30	7 27	52 28	7 36	53 26	7 45	54 24	7 54	55 22	8 4	21	21	3	
42	48 36	7 0	49 34	7 9	50 32	7 18	51 30	7 28	52 28	7 37	53 26	7 46	54 24	7 55	55 22	8 5	22	22	4	
44	48 36	7 1	49 34	7 10	50 32	7 20	51 30	7 29	52 28	7 38	53 26	7 48	54 24	7 57	55 22	8 6	23	23	4	
46	48 36	7 2	49 34	7 11	50 32	7 21	51 30	7 30	52 28	7 39	53 26	7 49	54 24	7 58	55 22	8 7	24	24	4	
48	48 36	7 3	49 34	7 12	50 32	7 22	51 30	7 31	52 28	7 40	53 26	7 50	54 24	7 59	55 22	8 9	25	25	4	
50	48 36	7 4	49 34	7 14	50 32	7 23	51 30	7 32	52 28	7 42	53 26	7 51	54 24	8 0	55 22	8 10	26	26	5	
52	48 36	7 5	49 34	7 15	50 32	7 24	51 30	7 33	52 28	7 43	53 26	7 52	54 24	8 1	55 22	8 11	27	27	5	
54	48 36	7 6	49 34	7 16	50 32	7 25	51 30	7 34	52 28	7 44	53 26	7 53	54 24	8 3	55 22	8 12	28	28	5	
56	48 36	7 7	49 34	7 17	50 32	7 26	51 30	7 36	52 28	7 45	53 26	7 54	54 24	8 4	55 22	8 13	29	29	5	
58	48 36	7 8	49 34	7 18	50 32	7 27	51 30	7 37	52 28	7 46	53 26	7 56	54 24	8 5	55 22	8 14	30	30	5	
15°	54'	55'	56'	57'	58'	59'	60'	61'												
0'	48 36	7 9	49 34	7 19	50 32	7 28	51 30	7 38	52 28	7 47	53 26	7 57	54 24	8 6	55 22	8 16	31	31	6	
2	48 36	7 10	49 34	7 20	50 32	7 29	51 30	7 39	52 28	7 48	53 26	7 58	54 24	8 7	55 22	8 17	32	32	6	
4	48 36	7 11	49 34	7 21	50 32	7 30	51 30	7 40	52 28	7 49	53 26	7 59	54 24	8 8	55 22	8 18	33	33	6	
6	48 36	7 13	49 34	7 22	50 32	7 32	51 30	7 41	52 28	7 51	53 26	8 0	54 24	8 10	55 22	8 19	34	34	7	
8	48 36	7 14	49 34	7 23	50 32	7 33	51 30	7 42	52 28	7 52	53 26	8 1	54 24	8 11	55 22	8 20	35	35	7	
10	48 36	7 15	49 34	7 24	50 32	7 34	51 30	7 43	52 28	7 53	53 26	8 2	54 24	8 12	55 22	8 21	36	36	7	
12	48 36	7 16	49 34	7 25	50 32	7 35	51 30	7 44	52 28	7 54	53 26	8 3	54 23	8 13	55 22	8 23	37	37	7	
14	48 36	7 17	49 34	7 26	50 32	7 36	51 30	7 45	52 28	7 55	53 26	8 4	54 23	8 14	55 21	8 24	38	38	7	
16	48 36	7 18	49 34	7 27	50 32	7 37	51 30	7 47	52 28	7 56	53 25	8 5	54 23	8 15	55 21	8 25	39	39	8	
18	48 36	7 19	49 34	7 28	50 32	7 38	51 30	7 48	52 27	7 57	53 25	8 7	54 23	8 17	55 21	8 26	40	40	8	
20	48 36	7 20	49 34	7 29	50 32	7 39	51 30	7 49	52 27	7 58	53 25	8 8	54 23	8 18	55 21	8 27	41	41	8	
22	48 36	7 21	49 34	7 31	50 32	7 40	51 30	7 50	52 27	8 0	53 25	8 9	54 23	8 19	55 21	8 29	42	42	8	
24	48 36	7 22	49 34	7 32	50 32	7 41	51 30	7 51	52 27	8 1	53 25	8 10	54 23	8 20	55 21	8 30	43	43	8	
26	48 36	7 23	49 34	7 33	50 32	7 42	51 29	7 52	52 27	8 2	53 25	8 11	54 23	8 21	55 21	8 31	44	44	9	
28	48 36	7 24	49 34	7 34	50 31	7 43	51 29	7 53	52 27	8 3	53 25	8 13	54 23	8 22	55 21	8 32	45	45	9	
30	48 36	7 25	49 33	7 35	50 31	7 44	51 29	7 54	52 27	8 4	53 25	8 14	54 23	8 23	55 21	8 33	46	46	9	
32	48 36	7 26	49 33	7 36	50 31	7 46	51 29	7 56	52 27	8 5	53 25	8 15	54 23	8 25	55 20	8 34	47	47	9	
34	48 36	7 27	49 33	7 37	50 31	7 47	51 29	7 56	52 27	8 6	53 25	8 16	54 22	8 26	55 20	8 36	48	48	9	
36	48 36	7 28	49 33	7 38	50 31	7 48	51 29	7 58	52 27	8 7	53 24	8 17	54 22	8 27	55 20	8 37	49	49	9	
38	48 36	7 29	49 33	7 39	50 31	7 49	51 29	7 59	52 27	8 8	53 24	8 18	54 22	8 28	55 20	8 38	50	50	9	
40	48 36	7 30	49 33	7 40	50 31	7 50	51 29	8 0	52 27	8 9	53 24	8 19	54 22	8 29	55 20	8 39	51	51	9	
42	48 36	7 31	49 33	7 41	50 31	7 51	51 29	8 1	52 27	8 11	53 24	8 21	54 22	8 30	55 20	8 40	52	52	9	
44	48 36	7 32	49 33	7 42	50 31	7 52	51 29	8 2	52 27	8 12	53 24	8 22	54 22	8 32	55 20	8 41	53	53	9	
46	48 36	7 33	49 33	7 43	50 31	7 53	51 29	8 3	52 27	8 13	53 24	8 23	54 22	8 33	55 20	8 43	54	54	9	
48	48 36	7 34	49 33	7 44	50 31	7 54	51 29	8 4	52 27	8 14	53 24	8 24	54 22	8 34	55 20	8 44	55	55	9	
50	48 36	7 35	49 33	7 45	50 31	7 55	51 29	8 5	52 27	8 15	53 24	8 25	54 22	8 35	55 19	8 45	56	56	9	
52	48 36	7 37	49 33	7 46	50 31	7 56	51 29	8 6	52 27	8 16	53 24	8 26	54 22	8 36	55 19	8 46	57	57	9	
54	48 36	7 38	49 33	7 48	50 31	7 57	51 29	8 7	52 26	8 17	53 24	8 27	54 22	8 37	55 19	8 47	58	58	9	
56	48 36	7 39	49 33	7 49	50 31	7 59	51 29	8 8	52 26	8 18	53 5									

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (16° and 17°)

App. Alt.		Minutes of Moon's Hor. Parallax.																Seconds of H. P.					
		54'		55'		56'		57'		58'		59'		60'		61'		C	A				
16°		Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°						
0'	48 36	7 41	49 33	7 51	50 31	8 1	51 28	8 11	52 26	8 21	53 23	8 31	54 21	8 41	55 19	8 50	1	0					
2	48 36	7 42	49 33	7 52	50 31	8 2	51 28	8 12	52 26	8 22	53 23	8 32	54 21	8 42	55 18	8 52	2	0					
4	48 35	7 43	49 33	7 53	50 30	8 3	51 28	8 13	52 26	8 23	53 23	8 33	54 21	8 43	55 18	8 53	3	1					
6	48 35	7 44	49 32	7 54	50 30	8 4	51 28	8 14	52 25	8 24	53 23	8 34	54 20	8 44	55 18	8 54	4	1					
8	48 35	7 45	49 32	7 55	50 30	8 5	51 28	8 15	52 25	8 25	53 23	8 35	54 20	8 45	55 18	8 55	5	1					
10	48 35	7 46	49 32	7 56	50 30	8 6	51 27	8 16	52 25	8 26	53 23	8 36	54 20	8 47	55 18	8 57	6	1					
12	48 34	7 47	49 32	7 57	50 30	8 7	51 27	8 17	52 25	8 27	53 22	8 38	54 20	8 48	55 18	8 58	7	1					
14	48 34	7 48	49 32	7 58	50 29	8 8	51 27	8 18	52 25	8 28	53 22	8 39	54 20	8 49	55 17	8 59	8	1					
16	48 34	7 49	49 32	7 59	50 29	8 9	51 27	8 20	52 24	8 30	53 22	8 40	54 20	8 50	55 17	9	0	2					
18	48 34	7 50	49 31	8 0	50 29	8 10	51 27	8 21	52 24	8 31	53 22	8 41	54 19	8 51	55 17	9	1	2					
20	48 33	7 51	49 31	8 1	50 29	8 11	51 26	8 22	52 24	8 32	53 22	8 42	54 19	8 52	55 17	9	2	2					
22	48 33	7 52	49 31	8 2	50 29	8 13	51 26	8 23	52 24	8 33	53 21	8 43	54 19	8 54	55 17	9	3	2					
24	48 33	7 53	49 31	8 3	50 28	8 14	51 26	8 24	52 24	8 34	53 21	8 45	54 19	8 55	55 16	9	4	2					
26	48 33	7 54	49 31	8 4	50 28	8 15	51 26	8 25	52 23	8 35	53 21	8 46	54 19	8 56	55 16	9	5	2					
28	48 33	7 55	49 31	8 6	50 28	8 16	51 26	8 26	52 23	8 36	53 21	8 47	54 18	8 57	55 16	9	6	2					
30	48 33	7 56	49 30	8 7	50 28	8 17	51 26	8 27	52 23	8 38	53 21	8 48	54 18	8 58	55 16	9	7	2					
32	48 33	7 57	49 30	8 8	50 28	8 18	51 25	8 28	52 23	8 39	53 21	8 49	54 18	8 59	55 16	9	8	2					
34	48 33	7 58	49 30	8 9	50 28	8 19	51 25	8 29	52 23	8 40	53 20	8 50	54 18	9	0	55 15	9	9	2				
36	48 33	7 59	49 30	8 10	50 28	8 20	51 25	8 31	52 23	8 41	53 20	8 51	54 18	9	1	55 15	9	10	2				
38	48 32	8 0	49 30	8 11	50 27	8 21	51 25	8 32	52 22	8 42	53 20	8 52	54 17	9	2	55 15	9	11	2				
40	48 32	8 1	49 30	8 12	50 27	8 22	51 25	8 33	52 22	8 43	53 20	8 54	54 17	9	3	55 15	9	12	2				
42	48 32	8 3	49 30	8 13	50 27	8 23	51 25	8 34	52 22	8 44	53 20	8 55	54 17	9	4	55 15	9	13	2				
44	48 32	8 4	49 29	8 14	50 27	8 25	51 24	8 35	52 22	8 45	53 19	8 56	54 17	9	5	55 14	9	14	2				
46	48 32	8 5	49 29	8 15	50 27	8 26	51 24	8 36	52 22	8 47	53 19	8 57	54 17	9	6	55 14	9	15	2				
48	48 32	8 6	49 29	8 16	50 27	8 27	51 24	8 37	52 21	8 48	53 19	8 58	54 16	9	7	55 14	9	16	2				
50	48 32	8 7	49 29	8 17	50 26	8 28	51 24	8 38	52 21	8 49	53 19	8 59	54 16	9	8	55 14	9	17	2				
52	48 31	8 8	49 29	8 18	50 26	8 29	51 24	8 39	52 21	8 50	53 19	9	0	54 16	9	9	55 13	9	18	2			
54	48 31	8 9	49 29	8 19	50 26	8 30	51 24	8 40	52 21	8 51	53 18	9	1	54 16	9	10	55 13	9	19	2			
56	48 31	8 10	49 29	8 20	50 26	8 31	51 23	8 42	52 21	8 52	53 18	9	2	54 16	9	11	55 13	9	20	2			
58	48 31	8 11	49 28	8 21	50 26	8 32	51 23	8 43	52 20	8 53	53 18	9	3	54 15	9	12	55 13	9	21	2			
17°	54'	55'	56'	57'	58'	59'	60'	61'															
0'	48 31	8 12	49 28	8 22	50 26	8 33	51 23	8 44	52 20	8 54	53 18	9	4	54 15	9	13	55 12	9	22	2			
2	48 31	8 13	49 28	8 24	50 25	8 34	51 23	8 45	52 20	8 55	53 17	9	5	54 15	9	14	55 12	9	23	2			
4	48 30	8 14	49 28	8 25	50 25	8 35	51 23	8 46	52 20	8 57	53 17	9	6	54 15	9	15	55 12	9	24	2			
6	48 30	8 15	49 28	8 26	50 25	8 36	51 22	8 47	52 20	8 58	53 17	9	7	54 14	9	16	55 12	9	25	2			
8	48 30	8 16	49 27	8 27	50 25	8 37	51 22	8 48	52 19	8 59	53 17	9	8	54 14	9	17	55 11	9	26	2			
10	48 30	8 17	49 27	8 28	50 25	8 38	51 22	8 49	52 19	9	0	53 17	9	9	54 14	9	18	55 11	9	27	2		
12	48 30	8 18	49 27	8 29	50 24	8 40	51 22	8 50	52 19	9	1	53 16	9	10	54 14	9	19	55 11	9	28	2		
14	48 29	8 19	49 27	8 30	50 24	8 41	51 21	8 51	52 19	9	2	53 16	9	11	54 13	9	20	55 11	9	29	2		
16	48 29	8 20	49 27	8 31	50 24	8 42	51 21	8 52	52 19	9	3	53 16	9	12	54 13	9	21	55 10	9	30	2		
18	48 29	8 21	49 26	8 32	50 24	8 43	51 21	8 54	52 18	9	4	53 16	9	13	54 13	9	22	55 10	9	31	2		
20	48 29	8 22	49 26	8 33	50 23	8 44	51 21	8 55	52 18	9	5	53 15	9	14	54 13	9	23	55 10	9	32	2		
22	48 29	8 23	49 26	8 34	50 23	8 45	51 21	8 56	52 18	9	6	53 15	9	15	54 12	9	24	55 10	9	33	2		
24	48 28	8 24	49 26	8 35	50 23	8 46	51 20	8 57	52 18	9	7	53 15	9	16	54 12	9	25	55 9	9	34	2		
26	48 28	8 25	49 26	8 36	50 23	8 47	51 20	8 58	52 17	9	8	53 15	9	17	54 12	9	26	55 9	9	35	2		
28	48 28	8 26	49 25	8 37	50 23	8 48	51 20	8 59	52 17	9	9	53 14	9	18	54 12	9	27	55 9	9	36	2		
30	48 28	8 27	49 25	8 38	50 22	8 49	51 20	9	0	52 17	9	10	53 14	9	19	54 11	9	28	55 9	9	37	2	
32	48 28	8 28	49 25	8 39	50 22	8 50	51 19	9	1	52 17	9	11	53 14	9	20	54 11	9	29	55 8	9	38	2	
34	48 27	8 30	49 25	8 40	50 22	8 51	51 19	9	2	52 16	9	12	53 14	9	21	54 11	9	30	55 8	9	39	2	
36	48 27	8 31	49 25	8 41	50 22	8 52	51 19	9	3	52 16	9	13	53 13	9	22	54 11	9	31	55 8	9	40	2	
38	48 27	8 32	49 24	8 43	50 22	8 54	51 19	9	4	52 16	9	14	53 13	9	23	54 10	9	32	55 8	9	41	2	
40	48 27	8 33	49 24	8 44	50 21	8 55	51 18	9	5	52 16	9	15	53 13	9	24	54 10	9	33	55 7	9	42	2	
42	48 27	8 34	49 24	8 45	50 21	8 56	51 18	9	6	52 15	9	16	53 13	9	25	54 10	9	34	55 7	9	43	2	
44	48 26	8 35	49 24	8 46	50 21	8 57	51 18	9	7	52 15	9	17	53 12	9	26	54 9	9	35	55 7	9	44	2	
46	48 26	8 36	49 23	8 47	50 21	8 58	51 18	9	8	52 15	9	18	53 12	9	27	54 9	9	36	55 6	9	45	2	
48	48 26	8 37	49 23	8 48	50 20	8 59	51 17	9	9	52 15	9	19	53 12	9	28	54 9	9	37	55 6	9	46	2	
50	48 26	8 38	49 23	8 49	50 20	9	0	51 17	9	10	53 11	9	20	54 9	9	29	54 8	9	38	55 6	9	47	2
52	48 26	8 39	49 23	8 50	50 20	9	1	51 17	9	11	53 11	9	21	54 8	9	30	54 8	9	39	55 5	9	48	2
54	48 25	8 40	49 22	8 51	50 20	9	2	51 17	9	12	53 11	9	22	54 8	9	31	54 8	9	40	55 5	9	49	2
56	48 25	8 41	49 22	8 52	50 19	9	3	51 16	9	13	53 11	9	23	54 8	9	32	54 8	9	41	55 5	9	50	2
58	48 25	8 42	49 22	8 53	50 19	9	4	51 16	9	14	53 10	9	24	54 7	9	33	54 7	9	42	55 5	9	51	2

(18° and 19°) The Correction of the Moon's Altitude, and the Aux. Angle A																		(w.)	
App Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.		
	54'		55'		56'		57'		58'		59'		60'		61'		"	"	
18°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	"	"	
0'	48 25	8 43	49 22	8 54	50 19	9 55	51 16	9 16	52 13	9 28	53 10	9 39	54 7	9 50	55 4	10 1	1	0	
2	48 24	8 44	49 22	8 55	50 19	9 55	51 16	9 18	52 13	9 29	53 10	9 40	54 7	9 51	55 4	10 2	2	1	
4	48 24	8 45	49 21	8 56	50 18	9 55	51 15	9 19	52 12	9 30	53 9	9 41	54 6	9 52	55 3	10 3	3	1	
6	48 24	8 46	49 21	8 57	50 18	9 55	51 15	9 20	52 12	9 31	53 9	9 42	54 6	9 53	55 3	10 4	4	1	
8	48 24	8 47	49 21	8 58	50 18	9 55	51 15	9 21	52 12	9 32	53 9	9 43	54 6	9 54	55 3	10 5	5	1	
10	48 23	8 48	49 20	8 59	50 17	9 55	51 14	9 22	52 11	9 33	53 8	9 44	54 5	9 55	55 3	10 6	6	1	
12	48 23	8 49	49 20	9 00	50 17	9 55	51 14	9 23	52 11	9 34	53 8	9 45	54 5	9 56	55 2	10 7	7	1	
14	48 23	8 50	49 20	9 01	50 17	9 55	51 14	9 24	52 11	9 35	53 8	9 46	54 5	9 57	55 2	10 8	8	1	
16	48 23	8 51	49 20	9 02	50 17	9 55	51 14	9 25	52 11	9 36	53 8	9 47	54 5	9 58	55 2	10 9	9	1	
18	48 22	8 52	49 19	9 03	50 16	9 55	51 13	9 26	52 10	9 37	53 7	9 48	54 4	9 59	55 1	10 10	10	1	
20	48 22	8 53	49 19	9 04	50 16	9 55	51 13	9 27	52 10	9 38	53 7	9 49	54 4	10 00	55 1	10 11	11	1	
22	48 22	8 54	49 19	9 05	50 16	9 55	51 13	9 28	52 10	9 39	53 7	9 50	54 4	10 01	55 1	10 12	12	1	
24	48 22	8 55	49 19	9 06	50 15	9 55	51 12	9 29	52 9	9 40	53 6	9 51	54 3	10 02	55 0	10 13	13	1	
26	48 21	8 56	49 18	9 07	50 15	9 55	51 12	9 30	52 9	9 41	53 6	9 52	54 3	10 03	55 0	10 14	14	1	
28	48 21	8 57	49 18	9 08	50 15	9 55	51 12	9 31	52 9	9 42	53 6	9 53	54 3	10 04	55 0	10 15	15	1	
30	48 21	8 58	49 18	9 09	50 15	9 55	51 12	9 32	52 8	9 43	53 5	9 54	54 3	10 05	55 0	10 16	16	1	
32	48 20	8 59	49 17	9 10	50 14	9 55	51 11	9 33	52 8	9 44	53 5	9 55	54 2	10 06	55 0	10 17	17	1	
34	48 20	9 00	49 17	9 11	50 14	9 55	51 11	9 34	52 8	9 45	53 5	9 56	54 2	10 07	55 0	10 18	18	1	
36	48 20	9 01	49 17	9 12	50 14	9 55	51 11	9 35	52 7	9 46	53 4	9 56	54 2	10 08	55 0	10 19	19	1	
38	48 20	9 02	49 17	9 13	50 14	9 55	51 10	9 36	52 7	9 47	53 4	9 57	54 1	10 09	55 0	10 20	20	1	
40	48 19	9 03	49 16	9 14	50 13	9 55	51 10	9 37	52 7	9 48	53 4	9 58	54 1	10 10	55 0	10 21	21	1	
42	48 19	9 04	49 16	9 15	50 13	9 55	51 10	9 38	52 6	9 49	53 3	9 59	54 1	10 11	55 0	10 22	22	1	
44	48 19	9 05	49 16	9 16	50 13	9 55	51 10	9 39	52 6	9 50	53 3	10 00	54 1	10 12	55 0	10 23	23	1	
46	48 19	9 06	49 15	9 17	50 12	9 55	51 9	9 40	52 6	9 51	53 3	10 01	54 0	10 13	55 0	10 24	24	1	
48	48 19	9 07	49 15	9 18	50 12	9 55	51 9	9 41	52 6	9 52	53 3	10 02	54 0	10 14	55 0	10 25	25	1	
50	48 18	9 08	49 15	9 19	50 12	9 55	51 9	9 42	52 5	9 53	53 2	10 03	54 0	10 15	55 0	10 26	26	1	
52	48 18	9 09	49 15	9 20	50 12	9 55	51 8	9 43	52 5	9 54	53 2	10 04	54 0	10 16	55 0	10 27	27	1	
54	48 18	9 10	49 14	9 21	50 11	9 55	51 8	9 44	52 5	9 55	53 2	10 05	54 0	10 17	55 0	10 28	28	1	
56	48 17	9 11	49 14	9 22	50 11	9 55	51 8	9 45	52 5	9 56	53 2	10 06	54 0	10 18	55 0	10 29	29	1	
58	48 17	9 12	49 14	9 23	50 11	9 55	51 7	9 46	52 4	9 57	53 1	10 07	54 0	10 19	55 0	10 30	30	1	
59	48 17	9 13	49 14	9 24	50 10	9 55	51 7	9 47	52 4	9 58	53 1	10 08	54 0	10 20	55 0	10 31	31	1	
19°	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	58'	59'	60'	61'	"	"	
0'	48 17	9 14	49 13	9 25	50 10	9 55	51 7	9 48	52 4	10 00	53 1	10 11	53 57	10 22	54 54	10 36	36	1	
2	48 16	9 15	49 13	9 26	50 10	9 55	51 7	9 50	52 3	10 01	53 1	10 12	53 57	10 23	54 53	10 37	37	1	
4	48 16	9 16	49 13	9 27	50 9	9 55	51 6	9 51	52 3	10 02	53 0	10 13	53 56	10 24	54 53	10 38	38	1	
6	48 16	9 17	49 12	9 28	50 9	9 55	51 6	9 52	52 3	10 03	53 0	10 14	53 56	10 25	54 53	10 39	39	1	
8	48 15	9 18	49 12	9 29	50 9	9 55	51 5	9 53	52 2	10 04	53 0	10 15	53 56	10 26	54 52	10 40	40	1	
10	48 15	9 19	49 12	9 30	50 8	9 55	51 5	9 54	52 2	10 05	53 0	10 16	53 55	10 27	54 52	10 41	41	1	
12	48 15	9 20	49 11	9 31	50 8	9 55	51 5	9 55	52 1	10 06	53 0	10 17	53 55	10 28	54 52	10 42	42	1	
14	48 14	9 21	49 11	9 32	50 8	9 55	51 4	9 56	52 1	10 07	53 0	10 18	53 55	10 29	54 51	10 43	43	1	
16	48 14	9 22	49 11	9 33	50 7	9 55	51 4	9 57	52 1	10 08	53 0	10 19	53 54	10 30	54 51	10 44	44	1	
18	48 14	9 23	49 10	9 34	50 7	9 55	51 4	9 58	52 0	10 09	53 0	10 20	53 54	10 31	54 50	10 45	45	1	
20	48 13	9 24	49 10	9 35	50 7	9 55	51 3	9 59	52 0	10 10	53 0	10 21	53 53	10 32	54 50	10 46	46	1	
22	48 13	9 25	49 10	9 36	50 6	9 55	51 3	10 00	52 0	10 11	53 0	10 22	53 53	10 33	54 50	10 47	47	1	
24	48 13	9 26	49 9	9 37	50 6	9 55	51 3	10 01	52 0	10 12	53 0	10 23	53 53	10 34	54 50	10 48	48	1	
26	48 12	9 27	49 9	9 38	50 6	9 55	51 2	10 02	52 0	10 13	53 0	10 24	53 52	10 35	54 50	10 49	49	1	
28	48 12	9 28	49 9	9 39	50 5	9 55	51 2	10 03	52 0	10 14	53 0	10 25	53 52	10 36	54 50	10 50	50	1	
30	48 12	9 29	49 8	9 40	50 5	9 55	51 1	10 04	52 0	10 15	53 0	10 26	53 52	10 37	54 50	10 51	51	1	
32	48 11	9 30	49 8	9 41	50 5	9 55	51 1	10 05	52 0	10 16	53 0	10 27	53 51	10 38	54 50	10 52	52	1	
34	48 11	9 31	49 8	9 42	50 4	9 55	51 1	10 06	52 0	10 17	53 0	10 28	53 51	10 39	54 50	10 53	53	1	
36	48 11	9 32	49 7	9 43	50 4	9 55	51 0	10 07	52 0	10 18	53 0	10 29	53 50	10 40	54 50	10 54	54	1	
38	48 11	9 33	49 7	9 44	50 4	9 55	51 0	10 08	52 0	10 19	53 0	10 30	53 50	10 41	54 50	10 55	55	1	
40	48 10	9 34	49 7	9 45	50 3	9 55	51 0	10 09	52 0	10 20	53 0	10 31	53 50	10 42	54 50	10 56	56	1	
42	48 10	9 35	49 6	9 46	50 3	9 55	51 0	10 10	52 0	10 21	53 0	10 32	53 50	10 43	54 50	10 57	57	1	
44	48 10	9 36	49 6	9 47	50 2	9 55	51 0	10 11	52 0	10 22	53 0	10 33	53 50	10 44	54 50	10 58	58	1	
46	48 9	9 37	49 6	9 48	50 2	9 55	51 0	10 12	52 0	10 23	53 0	10 34	53 50	10 45	54 50	10 59	59	1	
48	48 9	9 38	49 5	9 49	50 2	9 55	51 0	10 13	52 0	10 24	53 0	10 35	53 50	10 46	54 50	10 60	60	1	
50	48 8	9 39	49 5	9 50	50 1	9 55	51 0	10 14	52 0	10 25	53 0	10 36	53 50	10 47	54 50	10 61	61	1	
52	48 8	9 40	49 5	9 51	50 1	9 55	51 0	10 15	52 0	10 26	53 0	10 37	53 50	10 48	54 50	10 62	62	1	
54	48 8	9 41	49 4	9 52	50 1	9 55	51 0	10 16	52 0	10 27	53 0	10 38	53 50	10 49	54 50	10 63	63	1	
56	48 7	9 42	49 4	9 53	50 0	9 55	51 0	10 17	52 0	10 28	53 0	10 39	53 50	10 50	54 50	10 64	64	1	
58	48 7	9 43	49 4	9 54	50 0	9 55	51 0	10 18	52 0	10 29	53 0	10 40	53 50	10 51	54 50	10 65	65	1	

(w.)		The Correction of the Moon's Altitude, and the Aux. Angle A.														(20° and 21°)			
App Alt.		Minutes of Moon's Hor. Parallax.																Seconds of H. P.	
		54'		55'		56'		57'		58'		59'		60'		61'			
20°		Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	"	"
0'	48 7	9 44	49 3	9 57	50 0	10 9	50 56	10 21	51 52	10 34	52 49	10 46	53 45	10 58	54 42	11 11	1	1	0
2	48 6	9 45	49 3	9 58	49 59	10 10	50 56	10 22	51 52	10 35	52 48	10 47	53 45	11 0	54 41	11 12	2	2	0
4	48 6	9 46	49 2	9 59	49 59	10 11	50 55	10 24	51 52	10 36	52 48	10 48	53 44	11 1	54 41	11 13	3	3	0
6	48 6	9 47	49 2	10 0	49 58	10 12	50 55	10 25	51 51	10 37	52 47	10 49	53 44	11 2	54 40	11 14	4	4	0
8	48 5	9 48	49 2	10 1	49 58	10 13	50 54	10 26	51 51	10 38	52 47	10 50	53 43	11 3	54 40	11 15	5	5	0
10	48 5	9 49	49 1	10 2	49 58	10 14	50 54	10 27	51 50	10 39	52 47	10 52	53 43	11 4	54 39	11 16	6	6	0
12	48 5	9 51	49 1	10 3	49 57	10 15	50 54	10 28	51 50	10 40	52 46	10 53	53 42	11 5	54 39	11 18	7	7	0
14	48 4	9 52	49 0	10 4	49 57	10 16	50 53	10 29	51 49	10 41	52 46	10 54	53 42	12 0	54 38	11 19	8	8	0
16	48 4	9 53	49 0	10 5	49 56	10 17	50 53	10 30	51 49	10 42	52 45	10 55	53 42	12 1	54 38	11 20	9	9	0
18	48 3	9 54	49 0	10 6	49 56	10 19	50 52	10 31	51 49	10 44	52 45	10 56	53 41	12 2	54 37	11 21	10	10	0
20	48 3	9 55	48 59	10 7	49 56	10 20	50 52	10 32	51 48	10 45	52 44	10 57	53 41	12 3	54 37	11 22	11	11	0
22	48 3	9 56	48 59	10 8	49 55	10 21	50 51	10 33	51 48	10 46	52 44	10 58	53 40	12 4	54 37	11 23	12	12	0
24	48 2	9 57	48 58	10 9	49 55	10 22	50 51	10 34	51 47	10 47	52 44	10 59	53 40	12 5	54 36	11 24	13	13	0
26	48 2	9 58	48 58	10 10	49 54	10 23	50 51	10 35	51 47	10 48	52 43	11 0	53 39	12 6	54 36	11 26	14	14	0
28	48 1	9 59	48 58	10 11	49 54	10 24	50 50	10 36	51 46	10 49	52 43	11 1	53 39	12 7	54 35	11 27	15	15	0
30	48 1	10 0	48 57	10 12	49 54	10 25	50 50	10 37	51 46	10 50	52 42	11 2	53 38	12 8	54 35	11 28	16	16	0
32	48 1	10 1	48 57	10 13	49 53	10 26	50 49	10 39	51 46	10 51	52 42	11 3	53 38	12 9	54 34	11 29	17	17	0
34	48 0	10 2	48 56	10 14	49 53	10 27	50 49	10 40	51 45	10 52	52 41	11 4	53 37	12 10	54 34	11 30	18	18	0
36	48 0	10 3	48 56	10 15	49 52	10 28	50 48	10 41	51 45	10 53	52 41	11 5	53 37	12 11	54 33	11 31	19	19	0
38	47 59	10 4	48 56	10 16	49 52	10 29	50 48	10 42	51 44	10 54	52 40	12 0	53 37	12 12	54 33	11 32	20	20	0
40	47 59	10 5	48 55	10 17	49 51	10 30	50 48	10 43	51 44	10 55	52 40	12 1	53 36	12 13	54 32	11 34	21	21	0
42	47 59	10 6	48 55	10 18	49 51	10 31	50 47	10 44	51 43	10 57	52 40	12 2	53 36	12 14	54 32	11 35	22	22	0
44	47 58	10 7	48 54	10 19	49 51	10 32	50 47	10 45	51 43	10 58	52 39	12 3	53 35	12 15	54 31	11 36	23	23	0
46	47 58	10 8	48 54	10 21	49 50	10 33	50 46	10 46	51 42	10 59	52 39	12 4	53 35	12 16	54 31	11 37	24	24	0
48	47 58	10 9	48 54	10 22	49 50	10 34	50 46	10 47	51 42	11 0	52 38	12 5	53 34	12 17	54 30	11 38	25	25	0
50	47 57	10 10	48 53	10 23	49 49	10 35	50 45	10 48	51 42	11 1	52 38	12 6	53 34	12 18	54 30	11 39	26	26	0
52	47 57	10 11	48 53	10 24	49 49	10 36	50 45	10 49	51 41	11 2	52 37	12 7	53 33	12 19	54 29	11 40	27	27	0
54	47 56	10 12	48 52	10 25	49 49	10 37	50 45	10 50	51 41	11 3	52 37	12 8	53 33	12 20	54 29	11 42	28	28	0
56	47 56	10 13	48 52	10 26	49 48	10 38	50 44	10 51	51 40	11 4	52 36	12 9	53 32	12 21	54 28	11 43	29	29	0
58	47 56	10 14	48 52	10 27	49 48	10 40	50 44	10 52	51 40	11 5	52 36	12 10	53 32	12 22	54 28	11 44	30	30	0
21°	54'		55'		56'		57'		58'		59'		60'		61'				
0'	47 55	10 15	48 51	10 28	49 47	10 41	50 43	10 53	51 39	11 6	52 35	11 19	53 31	11 32	54 27	11 45	1	1	0
2	47 55	10 16	48 51	10 29	49 47	10 42	50 43	10 55	51 39	11 7	52 35	11 20	53 31	11 33	54 27	11 46	2	2	0
4	47 54	10 17	48 50	10 30	49 46	10 43	50 42	10 56	51 38	11 8	52 34	11 21	53 30	11 34	54 26	11 47	3	3	0
6	47 54	10 18	48 50	10 31	49 46	10 44	50 42	10 57	51 38	11 9	52 34	11 22	53 30	11 35	54 26	11 48	4	4	0
8	47 53	10 19	48 49	10 32	49 45	10 45	50 41	10 58	51 37	11 10	52 33	11 23	53 29	11 36	54 25	11 49	5	5	0
10	47 53	10 20	48 49	10 33	49 45	10 46	50 41	10 59	51 37	11 11	52 33	11 24	53 29	11 37	54 25	11 50	6	6	0
12	47 52	10 21	48 48	10 34	49 44	10 47	50 40	11 0	51 36	11 12	52 32	11 25	53 28	11 38	54 24	11 51	7	7	0
14	47 52	10 22	48 48	10 35	49 44	10 48	50 40	11 1	51 36	11 13	52 32	11 26	53 28	11 39	54 24	11 52	8	8	0
16	47 52	10 23	48 48	10 36	49 43	10 49	50 39	11 2	51 35	11 14	52 31	11 27	53 27	11 40	54 23	11 53	9	9	0
18	47 51	10 24	48 47	10 37	49 43	10 50	50 39	11 3	51 35	11 15	52 31	11 28	53 27	11 41	54 23	11 54	10	10	0
20	47 51	10 25	48 47	10 38	49 43	10 51	50 38	11 4	51 34	11 16	52 30	11 29	53 26	11 42	54 22	11 55	11	11	0
22	47 50	10 26	48 46	10 39	49 42	10 52	50 38	11 5	51 34	11 17	52 30	11 30	53 26	11 43	54 22	11 56	12	12	0
24	47 50	10 27	48 46	10 40	49 42	10 53	50 37	12 0	51 33	11 18	52 29	11 31	53 25	11 44	54 21	11 57	13	13	0
26	47 49	10 28	48 45	10 41	49 41	10 54	50 37	12 1	51 33	11 19	52 29	11 32	53 25	11 45	54 21	11 58	14	14	0
28	47 49	10 29	48 45	10 42	49 41	10 55	50 37	12 2	51 32	11 20	52 28	11 33	53 24	11 46	54 20	11 59	15	15	0
30	47 49	10 30	48 44	10 43	49 40	10 56	50 36	12 3	51 32	11 21	52 28	11 34	53 24	11 47	54 19	12 0	16	16	0
32	47 48	10 31	48 44	10 44	49 40	10 57	50 36	12 4	51 31	11 22	52 27	11 35	53 23	11 48	54 19	12 1	17	17	0
34	47 48	10 32	48 44	10 45	49 39	10 58	50 35	12 5	51 31	11 23	52 27	11 36	53 23	11 51	54 18	12 2	18	18	0
36	47 47	10 33	48 43	10 46	49 39	10 59	50 35	13 0	51 30	11 24	52 26	11 37	53 22	11 52	54 18	12 3	19	19	0
38	47 47	10 34	48 43	10 47	49 38	11 0	50 34	11 25	51 30	11 25	52 26	11 38	53 22	11 53	54 17	12 4	20	20	0
40	47 46	10 35	48 42	10 48	49 38	11 1	50 34	11 26	51 29	11 26	52 25	11 39	53 21	11 54	54 17	12 5	21	21	0
42	47 46	10 36	48 42	10 49	49 37	11 2	50 33	11 27	51 29	11 27	52 25	11 40	53 20	11 55	54 16	12 6	22	22	0
44	47 45	10 37	48 41	10 50	49 37	11 3	50 33	11 28	51 28	11 28	52 24	11 41	53 20	11 56	54 16	12 7	23	23	0
46	47 45	10 38	48 41	10 51	49 36	11 4	50 32	11 29	51 28	11 29	52 24	11 42	53 19	11 57	54 15	12 8	24	24	0
48	47 45	10 39	48 40	10 52	49 36	11 5	50 32	11 30	51 27	11 30	52 23	11 43	53 18	11 58	54 15	12 9	25	25	0
50	47 44	10 40	48 40	10 53	49 35	12 0	50 31	11 31	51 27	11 31	52 23	11 44	53 18	11 59	54 14	12 10	26	26	0
52	47 44	10 41	48 39	10 54	49 35	12 1	50 31	11 3											

(22° and 23°) The Correction of the Moon's Altitude, and the Aux. Angle A.																	(w.)	
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.	
	54'		55'		56'		57'		58'		59'		60'		61'		"	"
22°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	1	0
0'	47 42	10 45	48 37	10 58	49 33	11 12	50 29	11 25	51 24	11 39	52 20	11 52	53 16	12 6	54 11	12 19	1	0
2	47 41	10 46	48 37	11 0	49 32	11 13	50 28	11 26	51 24	11 40	52 19	11 53	53 15	12 7	54 11	12 20	3	1
4	47 41	10 47	48 36	11 1	49 32	11 14	50 28	11 27	51 23	11 41	52 19	11 54	53 14	12 8	54 10	12 21	5	1
6	47 40	10 48	48 36	11 2	49 31	11 15	50 27	11 29	51 23	11 42	52 18	11 55	53 14	12 9	54 10	12 22	7	6
8	47 40	10 49	48 35	11 3	49 31	11 16	50 27	11 30	51 22	11 43	52 18	11 57	53 13	12 10	54 9	12 24	9	7
10	47 39	10 50	48 35	11 4	49 30	11 17	50 26	11 31	51 22	11 44	52 17	11 58	53 13	12 11	54 8	12 25	11	8
12	47 39	10 51	48 34	11 5	49 30	11 18	50 26	11 32	51 21	11 45	52 17	11 59	53 12	12 12	54 8	12 26	13	9
14	47 38	10 52	48 34	11 6	49 29	11 19	50 25	11 33	51 21	11 46	52 16	12 0	53 12	12 13	54 7	12 27	15	10
16	47 38	10 53	48 33	11 7	49 29	11 20	50 24	11 34	51 20	11 47	52 16	12 1	53 11	12 15	54 7	12 28	17	11
18	47 37	10 54	48 33	11 8	49 28	11 21	50 24	11 35	51 20	11 49	52 15	12 2	53 11	12 16	54 6	12 29	19	12
20	47 37	10 55	48 32	11 9	49 28	11 22	50 23	11 36	51 19	11 50	52 14	12 3	53 10	12 17	54 5	12 30	21	13
22	47 36	10 56	48 32	11 10	49 27	11 23	50 23	11 37	51 18	11 51	52 14	12 4	53 9	12 18	54 5	12 32	23	14
24	47 36	10 57	48 31	11 11	49 27	11 24	50 22	11 38	51 18	11 52	52 13	12 5	53 9	12 19	54 4	12 33	25	15
26	47 35	10 58	48 31	11 12	49 26	11 25	50 22	11 39	51 17	11 53	52 13	12 6	53 8	12 20	54 4	12 34	27	16
28	47 35	10 59	48 30	11 13	49 26	11 26	50 21	11 40	51 17	11 54	52 12	12 7	53 8	12 21	54 3	12 35	29	17
30	47 34	11 0	48 30	11 14	49 25	11 27	50 21	11 41	51 16	11 55	52 12	12 8	53 7	12 22	54 3	12 36	31	18
32	47 34	11 1	48 29	11 15	49 25	11 28	50 20	11 42	51 16	11 56	52 11	12 10	53 7	12 23	54 2	12 37	33	19
34	47 33	11 2	48 29	11 16	49 24	11 30	50 20	11 43	51 15	11 57	52 11	12 11	53 6	12 25	54 1	12 38	35	20
36	47 33	11 3	48 28	11 17	49 24	11 31	50 19	11 44	51 15	11 58	52 10	12 12	53 5	12 26	54 1	12 39	37	21
38	47 32	11 4	48 28	11 18	49 23	11 32	50 19	11 45	51 14	11 59	52 9	12 13	53 5	12 27	54 0	12 41	39	22
40	47 32	11 5	48 27	11 19	49 23	11 33	50 18	11 46	51 13	12 0	52 9	12 14	53 4	12 28	54 0	12 42	41	23
42	47 31	11 6	48 27	11 20	49 22	11 34	50 17	11 47	51 13	12 1	52 8	12 15	53 4	12 29	53 59	12 43	43	24
44	47 31	11 7	48 26	11 21	49 22	11 35	50 17	11 49	51 12	12 2	52 8	12 16	53 3	12 30	53 58	12 44	45	25
46	47 30	11 8	48 26	11 22	49 21	11 36	50 16	11 50	51 12	12 3	52 7	12 17	53 2	12 31	53 58	12 45	47	26
48	47 30	11 9	48 25	11 23	49 20	11 37	50 16	11 51	51 11	12 4	52 6	12 18	53 2	12 32	53 57	12 46	49	27
50	47 29	11 10	48 25	11 24	49 20	11 38	50 15	11 52	51 11	12 5	52 6	12 19	53 1	12 33	53 57	12 47	51	28
52	47 29	11 11	48 24	11 25	49 19	11 39	50 15	11 53	51 10	12 6	52 5	12 21	53 1	12 34	53 56	12 48	53	29
54	47 28	11 12	48 24	11 26	49 19	11 40	50 14	11 54	51 9	12 7	52 5	12 22	53 0	12 36	53 55	12 50	55	30
56	47 28	11 13	48 23	11 27	49 18	11 41	50 14	11 55	51 9	12 8	52 4	12 23	52 59	12 37	53 55	12 51	57	31
58	47 27	11 14	48 23	11 28	49 18	11 42	50 13	11 56	51 8	12 10	52 4	12 24	52 59	12 38	53 54	12 52	59	32
23°	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	58'	59'	60'	61'	40	8
0'	47 27	11 15	48 22	11 29	49 17	11 43	50 12	11 57	51 8	12 11	52 3	12 25	52 58	12 39	53 53	12 53	41	8
2	47 26	11 16	48 21	11 30	49 17	11 44	50 12	11 58	51 7	12 12	52 2	12 26	52 58	12 40	53 53	12 54	43	9
4	47 26	11 17	48 21	11 31	49 16	11 45	50 11	11 59	51 7	12 13	52 2	12 27	52 57	12 41	53 52	12 55	45	10
6	47 25	11 18	48 20	11 32	49 16	11 46	50 11	12 0	51 6	12 14	52 1	12 28	52 56	12 42	53 52	12 56	47	11
8	47 25	11 19	48 20	11 33	49 15	11 47	50 10	12 1	51 5	12 15	52 1	12 29	52 56	12 43	53 51	12 57	49	12
10	47 24	11 20	48 19	11 34	49 14	11 48	50 10	12 2	51 5	12 16	52 0	12 30	52 55	12 44	53 50	12 58	51	13
12	47 24	11 21	48 19	11 35	49 14	11 49	50 9	12 3	51 4	12 17	51 59	12 31	52 55	12 45	53 50	13 0	53	14
14	47 23	11 22	48 18	11 36	49 13	11 50	50 9	12 4	51 4	12 18	51 59	12 33	52 54	12 47	53 49	13 1	55	15
16	47 23	11 23	48 18	11 37	49 13	11 51	50 8	12 5	51 3	12 19	51 58	12 34	52 53	12 48	53 49	13 2	57	16
18	47 22	11 24	48 17	11 38	49 12	11 52	50 7	12 6	51 3	12 21	51 58	12 35	52 53	12 49	53 48	13 3	59	17
20	47 21	11 25	48 17	11 39	49 12	11 53	50 7	12 7	51 2	12 22	51 57	12 36	52 52	12 50	53 47	13 4	61	18
22	47 21	11 26	48 16	11 40	49 11	11 54	50 6	12 8	51 1	12 23	51 56	12 37	52 52	12 51	53 47	13 5	63	19
24	47 20	11 27	48 15	11 41	49 11	11 55	50 6	12 10	51 1	12 24	51 56	12 38	52 51	12 52	53 46	13 6	65	20
26	47 20	11 28	48 15	11 42	49 10	11 56	50 5	12 11	51 0	12 25	51 55	12 39	52 50	12 53	53 45	13 7	67	21
28	47 19	11 29	48 14	11 43	49 9	11 57	50 5	12 12	51 0	12 26	51 55	12 40	52 50	12 54	53 45	13 8	69	22
30	47 19	11 30	48 14	11 44	49 9	11 58	50 4	12 13	50 59	12 27	51 54	12 41	52 49	12 55	53 44	13 10	71	23
32	47 18	11 31	48 13	11 45	49 8	11 59	50 3	12 14	50 58	12 28	51 53	12 42	52 48	12 56	53 44	13 11	73	24
34	47 18	11 32	48 13	11 46	49 8	12 0	50 3	12 15	50 58	12 29	51 53	12 43	52 48	12 58	53 43	13 12	75	25
36	47 17	11 33	48 12	11 47	49 7	12 1	50 2	12 16	50 57	12 30	51 52	12 44	52 47	12 59	53 42	13 13	77	26
38	47 17	11 34	48 12	11 48	49 7	12 2	50 2	12 17	50 57	12 31	51 52	12 46	52 47	13 0	53 42	13 14	79	27
40	47 16	11 35	48 11	11 49	49 6	12 3	50 1	12 18	50 56	12 32	51 51	12 47	52 46	13 1	53 41	13 15	81	28
42	47 16	11 36	48 11	11 50	49 6	12 4	50 0	12 19	50 55	12 33	51 50	12 48	52 45	13 2	53 40	13 16	83	29
44	47 15	11 37	48 10	11 51	49 5	12 5	50 0	12 20	50 55	12 34	51 50	12 49	52 45	13 3	53 40	13 18	85	30
46	47 14	11 38	48 9	11 52	49 4	12 6	49 59	12 21	50 54	12 35	51 49	12 50	52 44	13 4	53 39	13 19	87	31
48	47 14	11 39	48 8	11 53	49 4	12 7	49 59	12 22	50 54	12 37	51 48	12 51	52 43	13 5	53 38	13 20	89	32
50	47 13	11 40	48 8	11 54	49 3	12 8	49 58	12 23	50 53	12 38	51 48	12 52	52 43	13 6	53 38	13 21	91	33
52	47 13	11 41	48 8	11 55	49 3	12 10	49 57	12 24	50 52	12 39	51 47	12 53	52 42	13 7	53 37	13 22	93	34
54	47 12	11 42	48 7	11 56	49 2	12 11	49 57	12 25	50 52	12 40	51 47	12 54	52 42	13 8	53 36	13 23	95	35
56	47 12	11 43	48 7	11 57	49 1	12 12	49 56	12 26	50 51	12 41	51 46	12 55	52 41	13 10	53 36	13 24	97	36
58	47 11	11 44	48 6	11 58	49 1	12 13	49 56	12 27	50 51	12 42	51 45	12 56	52 40	13 11	53 35	13 25	99	37

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (24° and 25°)																				Seconds of H. P.	
App. Alt.	Minutes of Moon's Hor. Parallax.																Corr.	A			
	54'		55'		56'		57'		58'		59'		60'		61'						
24°	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A			
	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"			
0'	47 11	11 45 48	5	11 59	49 0	12 14	49 55	12 28	50 50	12 43	51 45	12 57	52 40	13 12	53 34	13 26	1	1			
2	47 10	11 46 48	5	12 0	49 0	12 15	49 54	12 29	50 49	12 44	51 44	12 58	52 39	13 13	53 34	13 26	2	2			
4	47 9	11 47 48	4	12 1	48 59	12 16	49 54	12 30	50 49	12 45	51 43	13 0	52 38	13 14	53 33	13 29	4	4			
6	47 9	11 48 48	4	12 2	48 58	12 17	49 53	12 31	50 48	12 46	51 43	13 1	52 38	13 15	53 32	13 30	6	6			
8	47 8	11 49 48	3	12 3	48 58	12 18	49 53	12 33	50 47	12 47	51 42	13 2	52 37	13 16	53 32	13 31	8	8			
10	47 8	11 50 48	2	12 4	48 57	12 19	49 52	12 34	50 47	12 48	51 41	13 3	52 36	13 17	53 31	13 32	10	10			
12	47 7	11 51 48	2	12 5	48 57	12 20	49 51	12 35	50 46	12 49	51 41	13 4	52 36	13 19	53 30	13 33	12	12			
14	47 7	11 52 48	1	12 6	48 56	12 21	49 51	12 36	50 45	12 50	51 40	13 5	52 35	13 20	53 30	13 34	14	14			
16	47 6	11 53 48	1	12 7	48 55	12 22	49 50	12 37	50 45	12 51	51 40	13 6	52 34	13 21	53 29	13 35	16	16			
18	47 5	11 54 48	0	12 8	48 55	12 23	49 50	12 38	50 44	12 52	51 39	13 7	52 34	13 22	53 28	13 36	18	18			
20	47 5	11 55 48	0	12 9	48 54	12 24	49 49	12 39	50 44	12 53	51 38	13 8	52 33	13 23	53 28	13 38	20	20			
22	47 4	11 56 47 59	12 10	48 54	12 25	49 48	12 40	50 43	12 55	51 38	13 9	52 32	13 24	53 27	13 39	22	22	21			
24	47 4	11 57 47 58	12 11	48 53	12 26	49 48	12 41	50 42	12 56	51 37	13 10	52 32	13 25	53 26	13 40	24	24	21			
26	47 3	11 58 47 58	12 12	48 52	12 27	49 47	12 42	50 42	12 57	51 36	13 11	52 31	13 26	53 26	13 41	26	26	21			
28	47 3	11 59 47 57	12 13	48 52	12 28	49 46	12 43	50 41	12 58	51 36	13 12	52 30	13 27	53 25	13 42	28	28	21			
30	47 2	12 0 47 57	12 14	48 51	12 29	49 46	12 44	50 40	12 59	51 35	13 14	52 30	13 28	53 24	13 43	30	30	21			
32	47 1	12 1 47 56	12 15	48 51	12 30	49 45	12 45	50 40	13 0	51 34	13 15	52 29	13 29	53 24	13 44	32	32	21			
34	47 1	12 2 47 55	12 16	48 50	12 31	49 44	12 46	50 39	13 1	51 34	13 16	52 28	13 31	53 23	13 45	34	34	21			
36	47 0	12 3 47 55	12 17	48 49	12 32	49 44	12 47	50 38	13 2	51 33	13 17	52 28	13 32	53 22	13 46	36	36	21			
38	47 0	12 4 47 54	12 18	48 49	12 33	49 43	12 48	50 38	13 3	51 32	13 18	52 27	13 33	53 21	13 47	38	38	21			
40	46 59	12 4 47 53	12 19	48 48	12 34	49 43	12 49	50 37	13 4	51 32	13 19	52 26	13 34	53 21	13 49	40	40	21			
42	46 58	12 5 47 53	12 20	48 47	12 35	49 42	12 50	50 37	13 5	51 31	13 20	52 26	13 35	53 20	13 50	42	42	21			
44	46 58	12 6 47 52	12 21	48 47	12 36	49 41	12 51	50 36	13 6	51 31	13 21	52 25	13 36	53 19	13 51	44	44	21			
46	46 57	12 7 47 52	12 22	48 46	12 37	49 41	12 52	50 35	13 7	51 30	13 22	52 24	13 37	53 19	13 52	46	46	21			
48	46 57	12 8 47 51	12 23	48 46	12 38	49 40	12 53	50 35	13 8	51 29	13 23	52 24	13 38	53 18	13 53	48	48	21			
50	46 56	12 9 47 50	12 24	48 45	12 39	49 39	12 54	50 34	13 9	51 28	13 24	52 23	13 39	53 17	13 54	50	50	21			
52	46 55	12 10 47 50	12 25	48 44	12 40	49 39	12 55	50 33	13 10	51 28	13 25	52 22	13 40	53 17	13 55	52	52	21			
54	46 55	12 11 47 49	12 26	48 44	12 41	49 38	12 56	50 33	13 11	51 27	13 26	52 22	13 41	53 16	13 56	54	54	21			
56	46 54	12 12 47 49	12 27	48 43	12 42	49 38	12 57	50 32	13 12	51 26	13 27	52 21	13 43	53 15	13 58	56	56	21			
58	46 54	12 13 47 48	12 28	48 43	12 43	49 37	12 58	50 31	13 14	51 26	13 29	52 20	13 44	53 15	13 59	58	58	21			
25°																					
0'	46 53	12 14 47 47	12 29	48 42	12 44	49 36	12 59	50 31	13 15	51 25	13 30	52 19	13 45	53 14	14 0	41	41	21			
2	46 52	12 15 47 47	12 30	48 41	12 45	49 36	13 0	50 30	13 16	51 24	13 31	52 19	13 46	53 13	14 1	43	43	21			
4	46 52	12 16 47 46	12 31	48 41	12 46	49 35	13 1	50 29	13 17	51 24	13 32	52 18	13 47	53 12	14 2	45	45	21			
6	46 51	12 17 47 46	12 32	48 40	12 47	49 34	13 2	50 29	13 18	51 23	13 33	52 17	13 48	53 12	14 3	47	47	21			
8	46 51	12 18 47 45	12 33	48 39	12 48	49 34	13 3	50 28	13 19	51 22	13 34	52 17	13 49	53 11	14 4	49	49	21			
10	46 50	12 19 47 44	12 34	48 39	12 49	49 33	13 4	50 27	13 20	51 22	13 35	52 16	13 50	53 10	14 5	51	51	21			
12	46 49	12 20 47 44	12 35	48 38	12 51	49 32	13 5	50 27	13 21	51 21	13 36	52 15	13 51	53 10	14 6	53	53	21			
14	46 49	12 21 47 43	12 36	48 37	12 52	49 32	13 6	50 26	13 22	51 20	13 37	52 14	13 52	53 9	14 7	55	55	21			
16	46 48	12 22 47 42	12 37	48 37	12 53	49 31	13 7	50 25	13 23	51 19	13 38	52 14	13 53	53 8	14 8	57	57	21			
18	46 47	12 23 47 42	12 38	48 36	12 54	49 30	13 8	50 24	13 24	51 19	13 39	52 13	13 54	53 7	14 9	59	59	21			
20	46 47	12 24 47 41	12 39	48 35	12 55	49 30	13 9	50 24	13 25	51 18	13 40	52 12	13 55	53 6	14 10	61	61	21			
22	46 46	12 25 47 40	12 40	48 35	12 56	49 29	13 10	50 23	13 26	51 17	13 41	52 12	13 56	53 5	14 11	63	63	21			
24	46 46	12 26 47 40	12 41	48 34	12 57	49 28	13 11	50 22	13 27	51 17	13 42	52 11	13 58	53 4	14 12	65	65	21			
26	46 45	12 27 47 39	12 42	48 33	12 58	49 28	13 12	50 22	13 28	51 16	13 43	52 10	13 59	53 3	14 13	67	67	21			
28	46 44	12 28 47 38	12 43	48 33	12 59	49 27	13 13	50 21	13 29	51 15	13 44	52 9	14 0	53 2	14 14	69	69	21			
30	46 44	12 29 47 38	12 44	48 32	13 0	49 26	13 14	50 20	13 30	51 15	13 45	52 8	14 1	53 1	14 15	71	71	21			
32	46 43	12 30 47 37	12 45	48 31	13 1	49 26	13 15	50 20	13 31	51 14	13 47	52 7	14 2	53 0	14 16	73	73	21			
34	46 42	12 31 47 37	12 46	48 31	13 2	49 25	13 16	50 19	13 32	51 13	13 48	52 6	14 3	53 0	14 17	75	75	21			
36	46 42	12 32 47 36	12 47	48 30	13 3	49 24	13 17	50 18	13 33	51 12	13 49	52 5	14 4	53 0	14 18	77	77	21			
38	46 41	12 33 47 35	12 48	48 30	13 4	49 23	13 18	50 18	13 34	51 12	13 50	52 4	14 5	53 0	14 19	79	79	21			
40	46 40	12 34 47 35	12 49	48 29	13 5	49 23	13 19	50 17	13 35	51 11	13 51	52 3	14 6	52 59	14 20	81	81	21			
42	46 40	12 35 47 34	12 50	48 28	13 6	49 22	13 20	50 16	13 36	51 10	13 52	52 2	14 7	52 58	14 21	83	83	21			
44	46 39	12 36 47 33	12 51	48 27	13 7	49 21	13 21	50 16	13 37	51 10	13 53	52 1	14 8	52 58	14 22	85	85	21			
46	46 39	12 37 47 33	12 52	48 27	13 8	49 21	13 22	50 15	13 38	51 9	13 54	52 0	14 9	52 57	14 23	87	87	21			
48	46 38	12 38 47 32	12 53	48 26	13 9	49 20	13 23	50 14	13 39	51 8	13 55	52 0	14 10	52 56	14 24	89	89	21			
50	46 37	12 39 47 31	12 54	48 25	13 10	49 19	13 24	50 13	13 40	51 7	13 56	52 0	14 11	52 55	14 25	91	91	21			
52	46 37	12 40 47 31	12 55	48 25	13 11	49 19	13 25	50 13	13 41	51 6	13 57	52 0	14 12	52 55	14 26	93	93	21			
54	46 36	12 41 47 30	12 56	48 24	13 12	49 18	13 26	50 12	13 42	51 5	13 58	52 0	14 13	52 54	14 27	95	95	21			
56	46 35	12 42 47 29	12 57	48 23	13 13																

(26° and 27°) The Correction of the Moon's Altitude, and the Aux. Angle A. (w.)		Minutes of Moon's Hor. Parallax.														Seconds of H. P.	
App. Alt.		54'	55'	56'	57'	58'	59'	60'	61'								
		Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A		
26°		+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°		
0'	46 34	12 44	47 28	12 59	48 22	13 15	49 16	13 30	50 10	13 46	51 4	14 2	51 58	14 17	52 52	14 33	1 0
2	46 33	12 45	47 27	13 0	48 21	13 16	49 15	13 31	50 9	13 47	51 3	14 3	51 57	14 18	52 51	14 34	1 1
4	46 33	12 46	47 27	13 1	48 21	13 17	49 14	13 32	50 8	13 48	51 2	14 4	51 56	14 19	52 50	14 35	1 2
6	46 32	12 47	47 26	13 2	48 20	13 18	49 14	13 33	50 7	13 49	51 1	14 5	51 55	14 20	52 49	14 36	1 3
8	46 31	12 47	47 25	13 3	48 19	13 19	49 13	13 34	50 6	13 50	51 0	14 6	51 54	14 21	52 48	14 37	1 4
10	46 31	12 48	47 25	13 4	48 19	13 20	49 12	13 35	50 5	13 51	50 5	14 7	51 53	14 22	52 47	14 38	1 5
12	46 30	12 49	47 24	13 5	48 18	13 21	49 11	13 36	50 4	13 52	50 4	14 8	51 52	14 23	52 46	14 39	1 6
14	46 29	12 50	47 23	13 6	48 17	13 22	49 10	13 37	50 3	13 53	50 3	14 9	51 51	14 24	52 45	14 40	1 7
16	46 29	12 51	47 23	13 7	48 16	13 23	49 10	13 38	50 2	13 54	50 2	14 10	51 50	14 25	52 44	14 41	1 8
18	46 28	12 52	47 22	13 8	48 16	13 24	49 10	13 39	50 1	13 55	50 1	14 11	51 49	14 26	52 43	14 42	1 9
20	46 27	12 53	47 21	13 9	48 15	13 25	49 9	13 40	50 0	13 56	50 0	14 12	51 48	14 27	52 42	14 43	1 10
22	46 27	12 54	47 21	13 10	48 14	13 26	49 8	13 41	50 0	13 57	50 0	14 13	51 47	14 28	52 41	14 44	1 11
24	46 26	12 55	47 20	13 11	48 14	13 27	49 7	13 42	50 0	13 58	50 0	14 14	51 46	14 29	52 40	14 45	1 12
26	46 25	12 56	47 19	13 12	48 13	13 28	49 6	13 43	50 0	13 59	50 0	14 15	51 45	14 30	52 39	14 46	1 13
28	46 25	12 57	47 18	13 13	48 12	13 29	49 5	13 44	50 0	14 0	50 0	14 16	51 44	14 31	52 38	14 47	1 14
30	46 24	12 58	47 17	13 14	48 12	13 30	49 4	13 45	50 0	14 1	50 0	14 17	51 43	14 32	52 37	14 48	1 15
32	46 23	12 59	47 17	13 15	48 11	13 31	49 3	13 46	50 0	14 2	50 0	14 18	51 42	14 33	52 36	14 49	1 16
34	46 23	13 0	47 16	13 16	48 10	13 32	49 2	13 47	50 0	14 3	50 0	14 19	51 41	14 34	52 35	14 50	1 17
36	46 22	13 1	47 16	13 17	48 9	13 33	49 1	13 48	50 0	14 4	50 0	14 20	51 40	14 35	52 34	14 51	1 18
38	46 21	13 2	47 15	13 18	48 8	13 34	49 0	13 49	50 0	14 5	50 0	14 21	51 39	14 36	52 33	14 52	1 19
40	46 21	13 3	47 14	13 19	48 8	13 35	49 0	13 50	50 0	14 6	50 0	14 22	51 38	14 37	52 32	14 53	1 20
42	46 20	13 4	47 14	13 20	48 7	13 36	49 0	13 51	50 0	14 7	50 0	14 23	51 37	14 38	52 31	14 54	1 21
44	46 19	13 5	47 13	13 21	48 6	13 37	49 0	13 52	50 0	14 8	50 0	14 24	51 36	14 39	52 30	14 55	1 22
46	46 19	13 6	47 12	13 22	48 5	13 38	49 0	13 53	50 0	14 9	50 0	14 25	51 35	14 40	52 29	14 56	1 23
48	46 18	13 7	47 12	13 23	48 5	13 39	49 0	13 54	50 0	14 10	50 0	14 26	51 34	14 41	52 28	14 57	1 24
50	46 17	13 8	47 11	13 24	48 4	13 40	49 0	13 55	50 0	14 11	50 0	14 27	51 33	14 42	52 27	14 58	1 25
52	46 17	13 9	47 10	13 25	48 4	13 41	49 0	13 56	50 0	14 12	50 0	14 28	51 32	14 43	52 26	14 59	1 26
54	46 16	13 10	47 9	13 26	48 3	13 42	49 0	13 57	50 0	14 13	50 0	14 29	51 31	14 44	52 25	15 0	1 27
56	46 15	13 11	47 8	13 27	48 3	13 43	49 0	13 58	50 0	14 14	50 0	14 30	51 30	14 45	52 24	15 1	1 28
58	46 15	13 12	47 8	13 28	48 2	13 44	49 0	13 59	50 0	14 15	50 0	14 31	51 29	14 46	52 23	15 2	1 29
27°		54'	55'	56'	57'	58'	59'	60'	61'								
0'	46 14	13 13	47 7	13 29	48 1	13 45	48 54	14 1	49 48	14 17	50 41	14 33	51 35	14 49	52 28	15 3	1 30
2	46 13	13 14	47 6	13 30	48 0	13 46	48 54	14 2	49 47	14 18	50 41	14 34	51 34	14 50	52 27	15 4	1 31
4	46 12	13 14	47 6	13 31	47 59	13 47	48 53	14 3	49 46	14 19	50 40	14 35	51 33	14 51	52 26	15 5	1 32
6	46 12	13 15	47 5	13 32	47 59	13 48	48 52	14 4	49 45	14 20	50 39	14 36	51 32	14 52	52 25	15 6	1 33
8	46 11	13 16	47 5	13 33	47 58	13 49	48 51	14 5	49 44	14 21	50 38	14 37	51 31	14 53	52 24	15 7	1 34
10	46 10	13 17	47 4	13 34	47 57	13 50	48 51	14 6	49 43	14 22	50 37	14 38	51 30	14 54	52 23	15 8	1 35
12	46 10	13 18	47 3	13 35	47 56	13 51	48 50	14 7	49 42	14 23	50 36	14 39	51 29	14 55	52 22	15 9	1 36
14	46 9	13 19	47 2	13 36	47 56	13 52	48 49	14 8	49 41	14 24	50 35	14 40	51 28	14 56	52 21	15 10	1 37
16	46 8	13 20	47 1	13 37	47 55	13 53	48 48	14 9	49 40	14 25	50 34	14 41	51 27	14 57	52 20	15 11	1 38
18	46 8	13 21	47 0	13 38	47 54	13 54	48 48	14 10	49 39	14 26	50 33	14 42	51 26	14 58	52 19	15 12	1 39
20	46 7	13 22	47 0	13 39	47 53	13 55	48 47	14 11	49 38	14 27	50 32	14 43	51 25	14 59	52 18	15 13	1 40
22	46 6	13 23	46 59	13 39	47 53	13 56	48 46	14 12	49 37	14 28	50 31	14 44	51 24	15 0	52 17	15 14	1 41
24	46 5	13 24	46 59	13 40	47 52	13 57	48 45	14 13	49 36	14 29	50 30	14 45	51 23	15 1	52 16	15 15	1 42
26	46 5	13 25	46 58	13 41	47 51	13 58	48 44	14 14	49 35	14 30	50 29	14 46	51 22	15 2	52 15	15 16	1 43
28	46 4	13 26	46 57	13 42	47 50	13 59	48 44	14 15	49 34	14 31	50 28	14 47	51 21	15 3	52 14	15 17	1 44
30	46 3	13 27	46 56	13 43	47 50	14 0	48 43	14 16	49 33	14 32	50 27	14 48	51 20	15 4	52 13	15 18	1 45
32	46 3	13 28	46 56	13 44	47 49	14 1	48 42	14 17	49 32	14 33	50 26	14 49	51 19	15 5	52 12	15 19	1 46
34	46 2	13 29	46 55	13 45	47 48	14 2	48 41	14 18	49 31	14 34	50 25	14 50	51 18	15 6	52 11	15 20	1 47
36	46 1	13 30	46 54	13 46	47 47	14 3	48 40	14 19	49 30	14 35	50 24	14 51	51 17	15 7	52 10	15 21	1 48
38	46 0	13 31	46 54	13 47	47 46	14 4	48 39	14 20	49 29	14 36	50 23	14 52	51 16	15 8	52 9	15 22	1 49
40	46 0	13 32	46 53	13 48	47 46	14 5	48 38	14 21	49 28	14 37	50 22	14 53	51 15	15 9	52 8	15 23	1 50
42	45 59	13 33	46 52	13 49	47 45	14 6	48 37	14 22	49 27	14 38	50 21	14 54	51 14	15 10	52 7	15 24	1 51
44	45 58	13 34	46 51	13 50	47 44	14 7	48 36	14 23	49 26	14 39	50 20	14 55	51 13	15 11	52 6	15 25	1 52
46	45 57	13 35	46 51	13 51	47 44	14 8	48 35	14 24	49 25	14 40	50 19	14 56	51 12	15 12	52 5	15 26	1 53
48	45 57	13 36	46 50	13 52	47 43	14 9	48 34	14 25	49 24	14 41	50 18	14 57	51 11	15 13	52 4	15 27	1 54
50	45 56	13 36	46 49	13 53	47 42	14 10	48 33	14 26	49 23	14 42	50 17	14 58	51 10	15 14	52 3	15 28	1 55
52	45 55	13 37	46 48	13 54	47 41	14 11	48 32	14 27	49 22	14 43	50 16	14 59	51 9	15 15	52 2	15 29	1 56
54	45 55	13 38	46 48	13 55	47 41	14 12	48 31	14 28	49 21	14 44	50 15	15 0	51 8	15 16	52 1	15 30	1 57
56	45 54	13 39	46 47	13 56	47 40	14 13	48 30	14 29	49 20	14 45	50 14	15 1	51 7	15 17	52 0	15 31	1 58
58	45 53	13 40	46 46	13 57	47 39	14 14	48 29	14 30	49 19	14 46	50 13	15 2	51 6	15 18	52 0	15 32	1 59

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (28° and 29°)																			
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.		
	54'		55'		56'		57'		58'		59'		60'		61'		"	0	
28	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	
0'	45 52	13 41	46 45	13 58	47 38	14 15	48 31	14 31	49 24	14 48	50 17	15 5	51 10	15 21	52 3	15 38	1	0	
2	45 52	13 42	46 45	13 59	47 38	14 16	48 31	14 32	49 24	14 49	50 17	15 6	51 10	15 22	52 3	15 39	2	1	
4	45 51	13 43	46 44	14 0	47 37	14 17	48 30	14 33	49 23	14 50	50 16	15 7	51 9	15 23	52 2	15 40	4	1	
6	45 50	13 44	46 43	14 1	47 36	14 18	48 29	14 34	49 22	14 51	50 15	15 8	51 8	15 24	52 1	15 41	6	2	
8	45 49	13 45	46 42	14 2	47 35	14 19	48 28	14 35	49 21	14 52	50 14	15 9	51 7	15 25	52 0	15 42	8	2	
10	45 49	13 46	46 42	14 3	47 35	14 20	48 27	14 36	49 20	14 53	50 13	15 10	51 6	15 27	51 59	15 43	10	3	
12	45 48	13 47	46 41	14 4	47 34	14 21	48 27	14 37	49 20	14 54	50 12	15 11	51 5	15 28	51 58	15 44	12	3	
14	45 47	13 48	46 40	14 5	47 33	14 22	48 26	14 38	49 19	14 55	50 12	15 12	51 5	15 29	51 57	15 45	14	3	
16	45 46	13 49	46 39	14 6	47 32	14 23	48 25	14 39	49 18	14 56	50 11	15 13	51 4	15 30	51 57	15 47	16	4	
18	45 46	13 50	46 38	14 7	47 31	14 24	48 24	14 40	49 17	14 57	50 10	15 14	51 3	15 31	51 56	15 48	18	4	
20	45 45	13 51	46 38	14 8	47 31	14 24	48 23	14 41	49 16	14 58	50 9	15 15	51 2	15 32	51 55	15 49	20	4	
22	45 44	13 52	46 37	14 9	47 30	14 25	48 23	14 42	49 16	14 59	50 8	15 16	51 1	15 33	51 54	15 50	22	5	
24	45 43	13 53	46 36	14 10	47 29	14 26	48 22	14 43	49 15	15 0	50 7	15 17	51 0	15 34	51 53	15 51	24	5	
26	45 43	13 54	46 36	14 11	47 28	14 27	48 21	14 44	49 14	15 1	50 6	15 18	51 0	15 35	51 52	15 52	26	5	
28	45 42	13 55	46 35	14 11	47 28	14 28	48 20	14 45	49 13	15 2	50 5	15 19	50 59	15 36	51 51	15 53	28	6	
30	45 41	13 56	46 34	14 12	47 27	14 29	48 20	14 46	49 12	15 3	50 4	15 20	50 58	15 37	51 50	15 54	30	6	
32	45 40	13 56	46 33	14 13	47 26	14 30	48 19	14 47	49 11	15 4	50 3	15 21	50 57	15 38	51 50	15 55	32	7	
34	45 40	13 57	46 32	14 14	47 25	14 31	48 18	14 48	49 11	15 5	50 3	15 22	50 56	15 39	51 49	15 56	34	7	
36	45 39	13 58	46 32	14 15	47 24	14 32	48 17	14 49	49 10	15 6	50 2	15 23	50 55	15 40	51 48	15 57	36	7	
38	45 38	13 59	46 31	14 16	47 24	14 33	48 16	14 50	49 9	15 7	50 2	15 24	50 54	15 41	51 47	15 58	38	7	
40	45 37	14 0	46 30	14 17	47 23	14 34	48 15	14 51	49 8	15 8	50 1	15 25	50 53	15 42	51 46	15 59	40	8	
42	45 37	14 1	46 29	14 18	47 22	14 35	48 15	14 52	49 7	15 9	50 0	15 26	50 53	15 43	51 45	16 0	42	8	
44	45 36	14 2	46 29	14 19	47 21	14 36	48 14	14 53	49 6	15 10	49 59	15 28	50 52	15 45	51 44	16 1	44	9	
46	45 35	14 3	46 28	14 20	47 20	14 37	48 13	14 54	49 5	15 12	49 58	15 29	50 51	15 46	51 43	16 2	46	9	
48	45 34	14 4	46 27	14 21	47 20	14 38	48 12	14 55	49 4	15 13	49 57	15 30	50 50	15 47	51 43	16 3	48	9	
50	45 34	14 5	46 26	14 22	47 19	14 39	48 11	14 56	49 3	15 14	49 57	15 31	50 49	15 48	51 42	16 4	50	9	
52	45 33	14 6	46 25	14 23	47 18	14 40	48 11	14 57	49 2	15 15	49 56	15 32	50 48	15 49	51 41	16 5	52	10	
54	45 32	14 7	46 25	14 24	47 17	14 41	48 10	14 58	49 1	15 16	49 55	15 33	50 47	15 50	51 40	16 6	54	10	
56	45 31	14 8	46 24	14 25	47 16	14 42	48 9	14 59	49 0	15 17	49 54	15 34	50 46	15 51	51 39	16 7	56	11	
58	45 31	14 9	46 23	14 26	47 16	14 43	48 8	15 0	49 0	15 18	49 53	15 35	50 46	15 52	51 38	16 8	58	11	
29	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	58'	59'	60'	61'			
0'	45 30	14 10	46 22	14 27	47 15	14 44	48 7	15 2	49 0	15 19	49 52	15 36	50 45	15 53	51 37	16 10	1	12	
2	45 29	14 11	46 22	14 28	47 14	14 45	48 6	15 3	48 59	15 20	49 51	15 37	50 44	15 54	51 36	16 11	2	12	
4	45 28	14 12	46 21	14 29	47 13	14 46	48 5	15 4	48 58	15 21	49 51	15 38	50 43	15 55	51 36	16 12	4	13	
6	45 27	14 13	46 20	14 30	47 12	14 47	48 4	15 5	48 57	15 22	49 50	15 39	50 42	15 56	51 35	16 13	6	13	
8	45 27	14 13	46 19	14 31	47 12	14 48	48 3	15 6	48 56	15 23	49 49	15 40	50 41	15 57	51 34	16 14	8	13	
10	45 26	14 14	46 18	14 32	47 11	14 49	48 2	15 6	48 56	15 24	49 48	15 41	50 40	15 58	51 33	16 15	10	14	
12	45 25	14 15	46 18	14 33	47 10	14 50	48 1	15 7	48 55	15 25	49 47	15 42	50 40	15 59	51 32	16 16	12	14	
14	45 24	14 16	46 17	14 34	47 9	14 51	48 0	15 8	48 54	15 26	49 46	15 43	50 39	16 0	51 31	16 17	14	15	
16	45 24	14 17	46 16	14 35	47 8	14 52	48 0	15 9	48 53	15 27	49 45	15 44	50 38	16 1	51 30	16 18	16	15	
18	45 23	14 18	46 15	14 36	47 7	14 53	48 0	15 10	48 52	15 28	49 44	15 45	50 37	16 2	51 29	16 20	18	15	
20	45 22	14 19	46 14	14 37	47 6	14 54	47 59	15 11	48 51	15 29	49 43	15 46	50 36	16 3	51 28	16 21	20	15	
22	45 21	14 20	46 14	14 38	47 5	14 55	47 58	15 12	48 50	15 30	49 42	15 47	50 35	16 4	51 27	16 22	22	16	
24	45 21	14 21	46 13	14 38	47 4	14 56	47 57	15 13	48 50	15 31	49 41	15 48	50 34	16 5	51 27	16 23	24	16	
26	45 20	14 22	46 12	14 39	47 3	14 57	47 56	15 14	48 49	15 32	49 40	15 49	50 33	16 6	51 26	16 24	26	16	
28	45 19	14 23	46 11	14 40	47 2	14 58	47 55	15 15	48 48	15 33	49 39	15 50	50 32	16 7	51 25	16 25	28	17	
30	45 18	14 24	46 10	14 41	47 1	14 59	47 54	15 16	48 47	15 34	49 38	15 51	50 32	16 8	51 24	16 26	30	17	
32	45 17	14 25	46 10	14 42	47 0	15 0	47 54	15 17	48 46	15 35	49 38	15 52	50 31	16 10	51 23	16 27	32	18	
34	45 17	14 26	46 9	14 43	47 0	15 1	47 53	15 18	48 45	15 36	49 37	15 53	50 30	16 11	51 22	16 28	34	18	
36	45 16	14 27	46 8	14 44	47 0	15 2	47 52	15 19	48 45	15 37	49 37	15 54	50 29	16 12	51 21	16 29	36	18	
38	45 15	14 28	46 7	14 45	47 0	15 3	47 51	15 20	48 44	15 38	49 36	15 55	50 28	16 13	51 20	16 30	38	19	
40	45 14	14 29	46 6	14 46	47 0	15 4	47 51	15 21	48 43	15 39	49 35	15 56	50 27	16 14	51 19	16 31	40	19	
42	45 13	14 30	46 5	14 47	46 59	15 5	47 50	15 22	48 42	15 40	49 34	15 57	50 26	16 15	51 18	16 32	42	20	
44	45 13	14 30	46 4	14 48	46 57	15 6	47 49	15 23	48 41	15 41	49 33	15 58	50 25	16 16	51 17	16 33	44	21	
46	45 12	14 31	46 3	14 49	46 56	15 7	47 48	15 24	48 40	15 42	49 32	15 59	50 24	16 17	51 16	16 34	46	21	
48	45 11	14 32	46 2	14 50	46 55	15 8	47 47	15 25	48 39	15 43	49 31	16 0	50 23	16 18	51 16	16 35	48	22	
50	45 10	14 33	46 1	14 51	46 54	15 9	47 46	15 26	48 38	15 44	49 30	16 1	50 23	16 19	51 15	16 36	50	23	
52	45 9	14 34	46 0	14 52	46 53	15 10	47 45	15 27	48 38	15 45	49 30	16 2	50 22	16 20	51 14	16 37	52	24	
54	45 9	14 35	46 0	14 53	46 53	15 11	47 45	15 28	48 37	15 46	49 29	16 3	50 21	16 21	51 13	16 39	54	25	
56	45 8	14 36	46 0	14 5															

(30° and 31°)		The Correction of the Moon's Altitude, and the Aux. Angle A.														(w.)	
App Alt.	Minutes of Moon's Hor. Parallax.														Seconds of H. P.		
	54'		55'		56'		57'		58'		59'		60'		61'		
	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	
30°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	
0'	45 6	14 38	45 58	14 56	46 50	15 13	47 42	15 31	48 34	15 49	49 26	16 6	50 18	16 24	51 10	16 42	
2	45 5	14 39	45 57	14 57	46 49	15 14	47 41	15 32	48 33	15 50	49 25	16 7	50 17	16 25	51 9	16 43	
4	45 4	14 40	45 56	14 58	46 48	15 15	47 40	15 33	48 32	15 51	49 24	16 8	50 16	16 26	51 8	16 44	
6	45 4	14 41	45 56	14 58	46 48	15 16	47 40	15 34	48 31	15 52	49 23	16 9	50 15	16 27	51 7	16 45	
8	45 3	14 42	45 55	14 59	46 47	15 17	47 39	15 35	48 31	15 53	49 22	16 11	50 14	16 28	51 6	16 46	
10	45 2	14 43	45 54	15 0	46 46	15 18	47 38	15 36	48 30	15 54	49 22	16 12	50 13	16 29	51 5	16 47	
12	45 1	14 44	45 53	15 1	46 45	15 19	47 37	15 37	48 29	15 55	49 21	16 13	50 13	16 30	51 4	16 48	
14	45 0	14 44	45 52	15 2	46 44	15 20	47 36	15 38	48 28	15 56	49 20	16 14	50 12	16 31	51 3	16 49	
16	45 0	14 45	45 51	15 3	46 43	15 21	47 35	15 39	48 27	15 57	49 19	16 15	50 11	16 32	51 2	16 50	
18	44 59	14 46	45 50	15 4	46 43	15 22	47 34	15 40	48 26	15 58	49 18	16 16	50 10	16 34	51 1	16 51	
20	44 58	14 47	45 50	15 5	46 42	15 23	47 33	15 41	48 25	15 59	49 17	16 17	50 9	16 35	51 0	16 52	
22	44 57	14 48	45 49	15 6	46 41	15 24	47 33	15 42	48 24	16 0	49 16	16 18	50 8	16 36	51 0	16 54	
24	44 56	14 49	45 48	15 7	46 40	15 25	47 32	15 43	48 23	16 1	49 15	16 19	50 7	16 37	50 59	16 55	
26	44 56	14 50	45 47	15 8	46 39	15 26	47 31	15 44	48 23	16 2	49 14	16 20	50 6	16 38	50 58	16 56	
28	44 55	14 51	45 46	15 9	46 38	15 27	47 30	15 45	48 22	16 3	49 14	16 21	50 5	16 39	50 57	16 57	
30	44 54	14 52	45 45	15 10	46 37	15 28	47 29	15 46	48 21	16 4	49 13	16 22	50 4	16 40	50 56	16 58	
32	44 53	14 53	45 45	15 11	46 37	15 29	47 28	15 47	48 20	16 5	49 12	16 23	50 3	16 41	50 55	16 59	
34	44 52	14 54	45 44	15 12	46 36	15 30	47 27	15 48	48 19	16 6	49 11	16 24	50 2	16 42	50 54	17 0	
36	44 51	14 55	45 43	15 13	46 35	15 31	47 26	15 49	48 18	16 7	49 10	16 25	50 1	16 43	50 53	17 1	
38	44 51	14 56	45 42	15 14	46 34	15 32	47 26	15 50	48 17	16 8	49 9	16 26	50 0	16 44	50 52	17 2	
40	44 50	14 56	45 41	15 15	46 33	15 33	47 25	15 51	48 16	16 9	49 8	16 27	50 0	16 45	50 51	17 3	
42	44 49	14 57	45 40	15 16	46 32	15 34	47 24	15 52	48 15	16 10	49 7	16 28	49 59	16 46	50 50	17 4	
44	44 48	14 58	45 40	15 16	46 31	15 35	47 23	15 53	48 14	16 11	49 6	16 29	49 58	16 47	50 49	17 5	
46	44 47	14 59	45 39	15 17	46 30	15 35	47 22	15 54	48 14	16 12	49 5	16 30	49 57	16 48	50 48	17 6	
48	44 46	15 0	45 38	15 18	46 30	15 36	47 21	15 55	48 13	16 13	49 4	16 31	49 56	16 49	50 47	17 7	
50	44 46	15 1	45 37	15 19	46 29	15 37	47 20	15 56	48 12	16 14	49 3	16 32	49 55	16 50	50 46	17 8	
52	44 45	15 2	45 36	15 20	46 28	15 38	47 19	15 57	48 11	16 15	49 2	16 33	49 54	16 51	50 45	17 9	
54	44 44	15 3	45 35	15 21	46 27	15 39	47 18	15 57	48 10	16 16	49 1	16 34	49 53	16 52	50 44	17 10	
56	44 43	15 4	45 34	15 22	46 26	15 40	47 17	15 58	48 9	16 17	49 0	16 35	49 52	16 53	50 43	17 11	
58	44 42	15 5	45 34	15 23	46 25	15 41	47 17	15 59	48 8	16 18	49 0	16 36	49 51	16 54	50 42	17 12	
31°	54'	55'	56'	57'	58'	59'	60'	61'									
0	44 41	15 6	45 33	15 24	46 24	15 42	47 16	16 0	48 7	16 19	48 59	16 37	49 50	16 55	50 41	17 13	
2	44 41	15 7	45 32	15 25	46 23	15 43	47 15	16 1	48 6	16 20	48 58	16 38	49 49	16 56	50 41	17 14	
4	44 40	15 8	45 31	15 26	46 23	15 44	47 14	16 2	48 5	16 21	48 57	16 39	49 48	16 57	50 40	17 15	
6	44 39	15 9	45 30	15 27	46 22	15 45	47 13	16 3	48 4	16 22	48 56	16 40	49 47	16 58	50 39	17 16	
8	44 38	15 9	45 29	15 28	46 21	15 46	47 12	16 4	48 3	16 23	48 55	16 41	49 46	16 59	50 38	17 17	
10	44 37	15 10	45 28	15 29	46 20	15 47	47 11	16 5	48 2	16 24	48 54	16 42	49 45	17 0	50 37	17 18	
12	44 36	15 11	45 28	15 30	46 19	15 48	47 10	16 6	48 2	16 25	48 53	16 43	49 44	17 1	50 36	17 19	
14	44 35	15 12	45 27	15 31	46 18	15 49	47 9	16 7	48 1	16 26	48 52	16 44	49 43	17 2	50 35	17 20	
16	44 35	15 13	45 26	15 32	46 17	15 50	47 8	16 8	48 0	16 27	48 51	16 45	49 42	17 3	50 34	17 21	
18	44 34	15 14	45 25	15 32	46 16	15 51	47 7	16 9	47 59	16 28	48 50	16 46	49 41	17 4	50 33	17 22	
20	44 33	15 15	45 24	15 33	46 15	15 52	47 6	16 10	47 58	16 28	48 49	16 47	49 40	17 5	50 32	17 23	
22	44 32	15 16	45 23	15 34	46 14	15 53	47 5	16 11	47 57	16 29	48 48	16 48	49 39	17 6	50 31	17 24	
24	44 31	15 17	45 22	15 35	46 14	15 54	47 4	16 12	47 56	16 30	48 47	16 49	49 38	17 7	50 30	17 25	
26	44 30	15 18	45 21	15 36	46 13	15 55	47 3	16 13	47 55	16 31	48 46	16 50	49 37	17 8	50 29	17 26	
28	44 30	15 19	45 20	15 37	46 12	15 56	47 2	16 14	47 54	16 32	48 45	16 51	49 36	17 9	50 28	17 27	
30	44 29	15 20	45 20	15 38	46 11	15 57	47 1	16 15	47 53	16 33	48 44	16 52	49 35	17 10	50 27	17 28	
32	44 28	15 21	45 19	15 39	46 10	15 57	47 0	16 16	47 52	16 34	48 43	16 53	49 34	17 11	50 26	17 29	
34	44 27	15 21	45 18	15 40	46 9	15 58	47 0	16 17	47 51	16 35	48 42	16 54	49 33	17 12	50 25	17 30	
36	44 26	15 22	45 17	15 41	46 8	15 59	46 59	16 18	47 50	16 36	48 42	16 55	49 33	17 13	50 24	17 31	
38	44 25	15 23	45 16	15 42	46 7	16 0	46 58	16 19	47 49	16 37	48 41	16 56	49 32	17 14	50 23	17 32	
40	44 24	15 24	45 15	15 43	46 6	16 1	46 57	16 20	47 48	16 38	48 40	16 57	49 31	17 15	50 22	17 33	
42	44 23	15 25	45 14	15 44	46 5	16 2	46 56	16 21	47 47	16 39	48 39	16 58	49 30	17 16	50 21	17 34	
44	44 22	15 26	45 13	15 45	46 4	16 3	46 55	16 22	47 46	16 40	48 38	16 59	49 29	17 17	50 20	17 35	
46	44 22	15 27	45 12	15 46	46 3	16 4	46 55	16 23	47 45	16 41	48 37	17 0	49 28	17 18	50 19	17 36	
48	44 21	15 28	45 11	15 46	46 2	16 5	46 54	16 24	47 44	16 42	48 36	17 1	49 27	17 19	50 18	17 37	
50	44 20	15 29	45 10	15 47	46 1	16 6	46 53	16 25	47 43	16 43	48 35	17 2	49 26	17 20	50 17	17 38	
52	44 19	15 30	45 9	15 48	46 0	16 7	46 52	16 26	47 42	16 44	48 34	17 3	49 25	17 21	50 16	17 39	
54	44 18	15 31	45 8	15 49	45 59	16 8	46 51	16 27	47 41	16 45	48 33	17 4	49 24	17 22	50 15	17 40	
56	44 17	15 31	45 8	15 50	45 59	16 9	46 50	16 28	47 40	16 46	48 32	17 5	49 23	17 23	50 14	17 41	
58	44 16	15 32	45 7	15 51	45 58	16 10	46 49	16 29	47 39	16 47	48 31	17 6	49 22	17 24	50 13	17 42	

(w.)		The Correction of the Moon's Altitude, and the Aux. Angle A. (32° and 33°)																Seconds of H. P.		
App Alt.	Minutes of Moon's Hor. Parallax.																A	A		
	54'		55'		56'		57'		58'		59'		60'		61'					
	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A				
32	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	1	1		
0'	44 15	15 33 45	6 15 52	45 57	16 11	46 48	16 29	47 39	16 48	48 30	17 7	49 21	17 26	50 12	17 44	1	1	0		
2	44 14	15 34 45	5 15 53	45 56	16 12	46 47	16 30	47 38	16 49	48 29	17 8	49 20	17 27	50 11	17 45	2	2	1		
4	44 14	15 35 45	4 15 54	45 55	16 13	46 46	16 31	47 37	16 50	48 28	17 9	49 19	17 28	50 10	17 46	3	3	1		
6	44 13	15 36 45	4 15 55	45 54	16 14	46 45	16 32	47 36	16 51	48 27	17 10	49 18	17 29	50 9	17 47	4	4	2		
8	44 12	15 37 45	3 15 56	45 53	16 15	46 44	16 33	47 35	16 52	48 26	17 11	49 17	17 30	50 8	17 49	5	5	2		
10	44 11	15 38 45	2 15 57	45 52	16 15	46 43	16 34	47 34	16 53	48 25	17 12	49 16	17 31	50 7	17 50	6	6	3		
12	44 10	15 39 45	1 15 58	45 52	16 16	46 42	16 35	47 33	16 54	48 24	17 13	49 15	17 32	50 6	17 51	7	7	3		
14	44 9	15 40 45	0 15 59	45 51	16 17	46 41	16 36	47 32	16 55	48 23	17 14	49 14	17 33	50 5	17 52	8	8	3		
16	44 8	15 41 44	59 15 59	45 50	16 18	46 40	16 37	47 31	16 56	48 22	17 15	49 13	17 34	50 4	17 53	9	9	3		
18	44 7	15 41 44	58 16	0 45 49	16 19	46 39	16 38	47 30	16 57	48 21	17 16	49 12	17 35	50 3	17 54	10	10	4		
20	44 6	15 42 44	57 16	1 45 48	16 20	46 38	16 39	47 29	16 58	48 20	17 17	49 11	17 36	50 2	17 55	11	11	4		
22	44 6	15 43 44	56 16	2 45 47	16 21	46 38	16 40	47 28	16 59	48 19	17 18	49 10	17 37	50 1	17 56	12	12	5		
24	44 5	15 44 44	55 16	3 45 46	16 22	46 37	16 41	47 27	17 0	48 18	17 19	49 9	17 38	49 59	17 57	13	13	5		
26	44 4	15 45 44	54 16	4 45 45	16 23	46 36	16 42	47 26	17 1	48 17	17 20	49 8	17 39	49 58	17 58	14	14	6		
28	44 3	15 46 44	53 16	5 45 44	16 24	46 35	16 43	47 25	17 2	48 16	17 21	49 7	17 40	49 57	17 59	15	15	6		
30	44 2	15 47 44	53 16	6 45 43	16 25	46 34	16 44	47 24	17 3	48 15	17 22	49 6	17 41	49 56	18 0	16	16	7		
32	44 1	15 48 44	52 16	7 45 42	16 26	46 33	16 45	47 23	17 4	48 14	17 23	49 5	17 42	49 55	18 1	17	17	7		
34	44 0	15 49 44	51 16	8 45 41	16 27	46 32	16 46	47 23	17 5	48 13	17 24	49 4	17 43	49 54	18 2	18	18	8		
36	43 59	15 50 44	50 16	9 45 40	16 28	46 31	16 47	47 22	17 6	48 12	17 25	49 3	17 44	49 53	18 3	19	19	8		
38	43 58	15 51 44	49 16	10 45 40	16 29	46 30	16 48	47 21	17 7	48 11	17 26	49 2	17 45	49 52	18 4	20	20	9		
40	43 57	15 51 44	48 16	11 45 39	16 30	46 29	16 49	47 20	17 8	48 10	17 27	49 1	17 46	49 51	18 5	21	21	9		
42	43 57	15 52 44	47 16	12 45 38	16 31	46 28	16 50	47 19	17 9	48 9	17 28	49 0	17 47	49 50	18 6	22	22	9		
44	43 56	15 53 44	46 16	13 45 37	16 31	46 27	16 51	47 18	17 10	48 8	17 29	48 59	17 48	49 49	18 7	23	23	10		
46	43 55	15 54 44	45 16	14 45 36	16 32	46 26	16 52	47 17	17 11	48 7	17 30	48 58	17 49	49 48	18 8	24	24	10		
48	43 54	15 55 44	44 16	15 45 35	16 33	46 25	16 53	47 16	17 12	48 6	17 31	48 57	17 50	49 47	18 9	25	25	11		
50	43 53	15 56 44	43 16	16 45 34	16 34	46 24	16 54	47 15	17 13	48 5	17 32	48 56	17 51	49 46	18 10	26	26	11		
52	43 52	15 57 44	42 16	17 45 33	16 35	46 23	16 54	47 14	17 14	48 4	17 33	48 55	17 52	49 45	18 11	27	27	11		
54	43 51	15 58 44	42 16	18 45 32	16 36	46 22	16 55	47 13	17 15	48 3	17 34	48 54	17 53	49 44	18 12	28	28	11		
56	43 50	15 59 44	41 16	19 45 31	16 37	46 21	16 56	47 12	17 16	48 2	17 35	48 53	17 54	49 43	18 13	29	29	12		
58	43 49	16 0 44	40 16	20 45 30	16 38	46 20	16 57	47 11	17 17	48 1	17 36	48 52	17 55	49 42	18 14	30	30	12		
33°	54'	55'	56'	57'	58'	59'	60'	61'									31	31		
0'	43 48	16 1 44	39 16 20	45 29	16 39	46 19	16 58	47 10	17 17	48 0	17 37	48 51	17 56	49 41	18 15	41	41	13		
2	43 48	16 1 44	38 16 21	45 28	16 40	46 19	16 59	47 9	17 18	47 59	17 38	48 50	17 57	49 40	18 16	42	42	13		
4	43 47	16 2 44	37 16 22	45 27	16 41	46 18	17 0 47	8 17	19 47	58	17 39	48 49	17 58	49 39	18 17	43	43	14		
6	43 46	16 3 44	36 16 23	45 26	16 42	46 17	17 1 47	7 17	20 47	57	17 40	48 47	17 59	49 38	18 18	44	44	14		
8	43 45	16 4 44	35 16 23	45 25	16 43	46 16	17 2 47	6 17	21 47	56	17 41	48 46	18 0 49	37	18 19	45	45	15		
10	43 44	16 5 44	34 16 24	45 24	16 44	46 15	17 3 47	5 17	22 47	55	17 42	48 45	18 1 49	36	18 20	46	46	15		
12	43 43	16 6 44	33 16 25	45 23	16 45	46 14	17 4 47	4 17	23 47	54	17 43	48 44	18 2 49	35	18 21	47	47	16		
14	43 42	16 7 44	32 16 26	45 22	16 46	46 13	17 5 47	3 17	24 47	53	17 44	48 43	18 3 49	34	18 22	48	48	16		
16	43 41	16 8 44	31 16 27	45 22	16 47	46 12	17 6 47	2 17	25 47	52	17 45	48 42	18 4 49	33	18 23	49	49	16		
18	43 40	16 9 44	30 16 28	45 21	16 48	46 11	17 7 47	1 17	26 47	51	17 46	48 41	18 5 49	32	18 24	50	50	17		
20	43 39	16 10 44	29 16 29	45 20	16 48	46 10	17 8 47	0 17	27 47	50	17 46	48 40	18 6 49	31	18 25	51	51	17		
22	43 38	16 10 44	28 16 30	45 19	16 49	46 9	17 9 46	59	17 28	49	17 47	48 39	18 7 49	30	18 26	52	52	17		
24	43 37	16 11 44	28 16 31	45 18	16 50	46 8	17 10 46	58	17 29	48	17 48	48 38	18 8 49	29	18 27	53	53	18		
26	43 37	16 12 44	27 16 32	45 17	16 51	46 7	17 11 46	57	17 30	47	17 49	48 37	18 9 49	28	18 28	54	54	18		
28	43 36	16 13 44	26 16 33	45 16	16 52	46 6	17 12 46	56	17 31	46	17 50	48 36	18 10 49	27	18 29	55	55	19		
30	43 35	16 14 44	25 16 34	45 15	16 53	46 5	17 13 46	55	17 32	45	17 51	48 35	18 11 49	26	18 30	56	56	19		
32	43 34	16 15 44	24 16 34	45 14	16 54	46 4	17 13 46	54	17 33	44	17 52	48 34	18 12 49	25	18 31	57	57	20		
34	43 33	16 16 44	23 16 35	45 13	16 55	46 3	17 14 46	53	17 34	43	17 53	48 33	18 13 49	24	18 32	58	58	20		
36	43 32	16 17 44	22 16 36	45 12	16 56	46 2	17 15 46	52	17 35	42	17 54	48 32	18 14 49	23	18 33	59	59	21		
38	43 31	16 18 44	21 16 37	45 11	16 57	46 1	17 16 46	51	17 36	41	17 55	48 31	18 15 49	22	18 34	60	60	21		
40	43 30	16 19 44	20 16 38	45 10	16 58	46 0	17 17 46	50	17 37	40	17 56	48 30	18 16 49	21	18 35	61	61	22		
42	43 29	16 19 44	19 16 39	45 9	16 59	45 59	17 18 46	49	17 38	39	17 57	48 29	18 17 49	20	18 36	62	62	22		
44	43 28	16 20 44	18 16 40	45 8	17 0 45	58	17 19 46	48	17 39	38	17 58	48 28	18 18 49	19	18 37	63	63	23		
46	43 27	16 21 44	17 16 41	45 7	17 1 45	57	17 20 46	47	17 40	37	17 59	48 27	18 19 49	18	18 38	64	64	23		
48	43 26	16 22 44	16 16 42	45 6	17 2 45	56	17 21 46	46	17 41	36	18 0 48	26	18 20 49	17	18 39	65	65	24		
50	43 25	16 23 44	15 16 43	45 5	17 3 45	55	17 22 46	45	17 42	35	18 1 48	25	18 21 49	16	18 40	66	66	24		
52	43 24	16 24 44	14 16 44	45 4	17 4 45	54	17 23 46	44	17 43	34	18 2 48	24	18 22 49	15	18 41	67	67	25		
54	43 24	16 25 44	13 16 45	45 3	17 5 45	53	17 24 46	43	17 44	33	18 3 48	23	18 23 49	14	18 42	68	68	25		
56	43 23	16 26 44	12 16 45	45 2	17 6 45	52	17 25 46	42	17 45	32	18 4 48	22	18 24 49	13	18 43	69	69	26		
58	43 22	16 27 44	11 16 46	45 1	17 7 45	51	17 26 46	41	17 46	31	18 5 48	21	18 25 49	12	18 44	70	70	26		

(34° and 35°)		The Correction of the Moon's Altitude, and the Aux. Angle A.																(w.)	
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.		
	54'	55'	56'	57'	58'	59'	60'	61'									"	"	
34°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	"	"	
0'	43 21	16 28 44	11	16 47	45 0	17 7	45 50	17 27	46 40	17 46	47 30	18 6	48 19	18 26	49 9	18 46	1	0	
2	43 20	16 28 44	10	16 48	44 59	17 8	45 49	17 28	46 39	17 47	47 29	18 7	48 18	18 27	49 8	18 47	2	1	
4	43 19	16 29 44	9	16 49	44 58	17 9	45 48	17 29	46 38	17 48	47 27	18 8	48 17	18 28	49 7	18 48	3	1	
6	43 18	16 30 44	8	16 50	44 57	17 10	45 47	17 30	46 37	17 49	47 26	18 9	48 16	18 29	49 6	18 49	4	2	
8	43 17	16 31 44	7	16 51	44 56	17 11	45 46	17 30	46 36	17 50	47 25	18 10	48 15	18 30	49 5	18 50	5	2	
10	43 16	16 32 44	6	16 52	44 55	17 12	45 45	17 31	46 35	17 51	47 24	18 11	48 14	18 31	49 4	18 51	6	2	
12	43 15	16 33 44	5	16 53	44 54	17 13	45 44	17 32	46 34	17 52	47 23	18 12	48 13	18 32	49 3	18 52	7	3	
14	43 14	16 34 44	4	16 54	44 53	17 13	45 43	17 33	46 33	17 53	47 22	18 13	48 12	18 33	49 2	18 53	8	3	
16	43 13	16 35 44	3	16 55	44 52	17 14	45 42	17 34	46 31	17 54	47 21	18 14	48 11	18 34	49 1	18 54	9	3	
18	43 12	16 36 44	2	16 55	44 51	17 15	45 41	17 35	46 30	17 55	47 20	18 15	48 10	18 35	48 59	18 55	10	3	
20	43 11	16 36 44	1	16 56	44 50	17 16	45 40	17 36	46 29	17 56	47 19	18 16	48 9	18 36	48 58	18 56	11	3	
22	43 10	16 37 44	0	16 57	44 49	17 17	45 39	17 37	46 28	17 57	47 18	18 17	48 8	18 37	48 57	18 57	12	3	
24	43 9	16 38 43 59	16 58	44 48	17 18	45 38	17 38	46 27	17 58	47 17	18 18	48 7	18 38	48 56	18 58	17 14	13	4	
26	43 8	16 39 43 58	17 0	44 47	17 19	45 37	17 39	46 26	17 59	47 16	18 19	48 6	18 39	48 55	18 59	18 15	14	4	
28	43 7	16 40 43 57	17 1	44 46	17 20	45 36	17 40	46 25	18 0	47 15	18 20	48 5	18 40	48 54	19 0	18 16	15	4	
30	43 6	16 41 43 56	17 2	44 45	17 21	45 35	17 41	46 24	18 1	47 14	18 21	48 4	18 41	48 53	19 1	18 17	16	4	
32	43 5	16 42 43 55	17 3	44 44	17 22	45 34	17 42	46 23	18 2	47 13	18 22	48 3	18 42	48 51	19 2	18 18	17	4	
34	43 4	16 43 43 54	17 4	44 43	17 23	45 33	17 43	46 22	18 3	47 12	18 23	48 2	18 43	48 50	19 3	18 19	18	4	
36	43 3	16 44 43 53	17 4	44 42	17 24	45 32	17 44	46 21	18 4	47 11	18 24	48 1	18 44	48 49	19 4	18 20	19	4	
38	43 2	16 44 43 52	17 5	44 41	17 24	45 31	17 44	46 20	18 5	47 10	18 25	47 59	18 45	48 48	19 5	18 21	20	4	
40	43 1	16 45 43 51	17 5	44 40	17 25	45 29	17 45	46 19	18 5	47 9	18 25	47 58	18 45	48 47	19 6	18 22	21	4	
42	43 0	16 46 43 50	17 6	44 39	17 26	45 28	17 46	46 18	18 6	47 8	18 26	47 57	18 46	48 46	19 7	18 23	22	4	
44	42 59	16 47 43 49	17 7	44 38	17 27	45 27	17 47	46 17	18 7	47 7	18 27	47 56	18 47	48 45	19 8	18 24	23	4	
46	42 59	16 48 43 48	17 8	44 37	17 28	45 26	17 48	46 16	18 8	47 6	18 28	47 55	18 48	48 44	19 9	18 25	24	4	
48	42 58	16 49 43 47	17 9	44 36	17 29	45 25	17 49	46 15	18 9	47 5	18 29	47 54	18 49	48 43	19 10	18 26	25	4	
50	42 57	16 50 43 46	17 10	44 35	17 30	45 24	17 50	46 14	18 10	47 4	18 30	47 53	18 50	48 41	19 11	18 27	26	4	
52	42 56	16 51 43 45	17 11	44 34	17 31	45 23	17 51	46 13	18 11	47 3	18 31	47 52	18 51	48 40	19 12	18 28	27	4	
54	42 55	16 52 43 44	17 12	44 33	17 32	45 22	17 52	46 12	18 12	47 2	18 32	47 51	18 52	48 39	19 13	18 29	28	4	
56	42 54	16 52 43 43	17 13	44 32	17 33	45 21	17 53	46 11	18 13	47 1	18 33	47 50	18 53	48 38	19 14	18 30	29	4	
58	42 53	16 53 43 42	17 13	44 31	17 34	45 20	17 54	46 10	18 14	46 59	18 34	47 49	18 54	48 37	19 15	18 31	30	4	
35°	54'	55'	56'	57'	58'	59'	60'	61'									"	"	
0'	42 52	16 54 43 41	17 14	44 30	17 35	45 19	17 55	46 8	18 15	46 58	18 35	47 47	18 55	48 36	19 16	18 32	31	4	
2	42 51	16 55 43 40	17 15	44 29	17 36	45 18	17 56	46 7	18 16	46 57	18 36	47 46	18 56	48 35	19 17	18 33	32	4	
4	42 50	16 56 43 39	17 16	44 28	17 36	45 17	17 57	46 6	18 17	46 56	18 37	47 45	18 57	48 34	19 18	18 34	33	4	
6	42 49	16 57 43 38	17 17	44 27	17 37	45 16	17 58	46 5	18 18	46 55	18 38	47 44	18 58	48 33	19 19	18 35	34	4	
8	42 48	16 58 43 37	17 18	44 26	17 38	45 15	17 59	46 4	18 19	46 54	18 39	47 43	18 59	48 31	19 20	18 36	35	4	
10	42 47	16 59 43 36	17 19	44 25	17 39	45 14	17 59	46 3	18 20	46 53	18 40	47 42	19 0	48 30	19 21	18 37	36	4	
12	42 46	16 59 43 35	17 20	44 24	17 40	45 13	18 0	46 2	18 21	46 52	18 41	47 41	19 1	48 29	19 22	18 38	37	4	
14	42 45	17 0 43 34	17 21	44 23	17 41	45 12	18 1	46 1	18 22	46 50	18 42	47 39	19 2	48 28	19 23	18 39	38	4	
16	42 44	17 1 43 33	17 22	44 22	17 42	45 11	18 2	46 0	18 23	46 49	18 43	47 38	19 3	48 27	19 24	18 40	39	4	
18	42 43	17 2 43 32	17 23	44 21	17 43	45 10	18 3	45 59	18 23	46 48	18 44	47 37	19 4	48 26	19 25	18 41	40	4	
20	42 42	17 3 43 31	17 23	44 20	17 44	45 9	18 4	45 58	18 24	46 47	18 45	47 36	19 5	48 25	19 26	18 42	41	4	
22	42 41	17 4 43 30	17 24	44 19	17 45	45 8	18 5	45 57	18 25	46 46	18 46	47 35	19 6	48 24	19 27	18 43	42	4	
24	42 40	17 5 43 29	17 25	44 18	17 46	45 7	18 6	45 56	18 26	46 45	18 47	47 34	19 7	48 23	19 28	18 44	43	4	
26	42 39	17 6 43 28	17 26	44 17	17 46	45 6	18 7	45 55	18 27	46 44	18 48	47 33	19 8	48 22	19 29	18 45	44	4	
28	42 38	17 7 43 27	17 27	44 16	17 47	45 5	18 8	45 54	18 28	46 43	18 49	47 32	19 9	48 21	19 30	18 46	45	4	
30	42 37	17 8 43 26	17 28	44 15	17 48	45 4	18 9	45 53	18 29	46 42	18 50	47 31	19 10	48 20	19 31	18 47	46	4	
32	42 36	17 9 43 25	17 29	44 14	17 49	45 3	18 10	45 52	18 30	46 41	18 51	47 30	19 11	48 19	19 32	18 48	47	4	
34	42 35	17 10 43 24	17 30	44 13	17 50	45 2	18 11	45 51	18 31	46 40	18 52	47 29	19 12	48 18	19 33	18 49	48	4	
36	42 34	17 11 43 23	17 31	44 12	17 51	45 1	18 12	45 50	18 32	46 39	18 53	47 28	19 13	48 17	19 34	18 50	49	4	
38	42 33	17 12 43 22	17 32	44 11	17 52	44 59	18 13	45 49	18 33	46 38	18 54	47 27	19 14	48 16	19 35	18 51	50	4	
40	42 32	17 13 43 21	17 33	44 10	17 53	44 58	18 14	45 48	18 34	46 37	18 55	47 26	19 15	48 15	19 36	18 52	51	4	
42	42 31	17 14 43 20	17 34	44 9	17 54	44 57	18 15	45 47	18 35	46 36	18 56	47 25	19 16	48 14	19 37	18 53	52	4	
44	42 30	17 15 43 19	17 35	44 8	17 55	44 56	18 16	45 46	18 36	46 35	18 57	47 24	19 17	48 13	19 38	18 54	53	4	
46	42 29	17 16 43 18	17 36	44 7	17 56	44 55	18 17	45 45	18 37	46 34	18 58	47 23	19 18	48 12	19 39	18 55	54	4	
48	42 28	17 17 43 17	17 37	44 6	17 57	44 54	18 18	45 44	18 38	46 33	18 59	47 22	19 19	48 11	19 40	18 56	55	4	
50	42 27	17 18 43 16	17 38	44 5	17 58	44 53	18 19	45 43	18 39	46 32	19 0	47 21	19 20	48 10	19 41	18 57	56	4	
52	42 26	17 19 43 15	17 39	44 4	17 59	44 52	18 20	45 42	18 40	46 31	19 1	47 20	19 21	48 9	19 42	18 58	57	4	
54	42 25	17 20 43 14	17 40	44 3	18 0	44 51	18 21	45 41	18 41	46 30	19 2	47 19	19 22	48 8	19 43	18 59	58	4	
56	42 24	17 21 43 13	17 41	44 2	18 1	44 50	18 22	45 40	18 42	46 29	19 3	47 18	19 23	48 7	19 44	19 0	59	4	
58	42 23	17 22 43 12	17 42	44 1	18 2	44 49	18 23	45 39	18 43	46 28	19 4	47 17	19 24	48 6	19 45	19 1	60	4	

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (36° and 37°)		Minutes of Moon's Hor. Parallax.																Seconds of H. P.	
App. Alt.		54'	55'	56'	57'	58'	59'	60'	61'										
		Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A		
36°		+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°		
0'	42 22	17 20	43 10	17 41	43 59	18 2 44	48 18 23	45 36	18 43	46 25	19 4 47	13 19 25	48 2 19	45				1	0
2	42 21	17 21	43 9	17 42	43 58	18 3 44	47 18 24	45 35	18 44	46 24	19 5 47	12 19 26	48 1 19	46				2	1
4	42 20	17 22	43 8	17 43	43 57	18 4 44	45 18 24	45 34	18 45	46 23	19 6 47	11 19 27	48 0 19	47				3	2
6	42 19	17 23	43 7	17 44	43 56	18 5 44	44 18 25	45 33	18 46	46 21	19 7 47	10 19 27	47 58	19				4	3
8	42 18	17 24	43 6	17 45	43 55	18 6 44	43 18 26	45 32	18 47	46 20	19 8 47	9 19 28	47 57	19				5	4
10	42 17	17 25	43 5	17 46	43 54	18 7 44	42 18 27	45 31	18 48	46 19	19 9 47	8 19 29	47 56	19				6	5
12	42 16	17 26	43 4	17 46	43 53	18 8 44	41 18 28	45 30	18 49	46 18	19 10 47	7 19 30	47 55	19				7	6
14	42 15	17 27	43 3	17 47	43 52	18 9 44	40 18 29	45 29	18 50	46 17	19 11 47	6 19 31	47 54	19				8	7
16	42 14	17 27	43 2	17 48	43 51	18 10 44	39 18 30	45 27	18 51	46 16	19 12 47	5 19 32	47 53	19				9	8
18	42 13	17 28	43 1	17 49	43 49	18 11 44	38 18 31	45 26	18 52	46 15	19 13 47	4 19 33	47 51	19				10	9
20	42 12	17 29	43 0	17 50	43 48	18 12 44	37 18 32	45 25	18 53	46 14	19 14 47	3 19 34	47 50	19				11	10
22	42 11	17 30	42 59	17 51	43 47	18 13 44	36 18 33	45 24	18 54	46 13	19 15 47	2 19 35	47 49	19				12	11
24	42 10	17 31	42 58	17 52	43 46	18 14 44	35 18 34	45 23	18 55	46 12	19 16 47	1 19 36	47 48	19				13	12
26	42 9	17 32	42 57	17 53	43 45	18 15 44	34 18 34	45 22	18 56	46 11	19 17 47	0 19 37	47 47	19				14	13
28	42 8	17 33	42 56	17 54	43 44	18 16 44	33 18 35	45 21	18 57	46 10	19 18 47	0 19 38	47 46	19				15	14
30	42 7	17 33	42 55	17 54	43 43	18 17 44	32 18 36	45 20	18 58	46 9	19 19 47	0 19 39	47 44	20				16	15
32	42 6	17 34	42 54	17 55	43 42	18 18 44	31 18 37	45 19	18 59	46 8	19 20 47	0 19 40	47 43	20				17	16
34	42 5	17 35	42 53	17 56	43 41	18 19 44	30 18 38	45 18	19 00	46 7	19 21 47	0 19 41	47 42	20				18	17
36	42 4	17 36	42 52	17 57	43 40	18 20 44	29 18 39	45 17	19 01	46 6	19 22 47	0 19 42	47 41	20				19	18
38	42 3	17 37	42 51	17 58	43 39	18 21 44	28 18 40	45 16	19 02	46 5	19 23 47	0 19 43	47 40	20				20	19
40	42 2	17 38	42 50	17 59	43 38	18 22 44	27 18 41	45 15	19 03	46 4	19 24 47	0 19 44	47 39	20				21	20
42	42 1	17 39	42 49	18 0	43 37	18 23 44	26 18 42	45 14	19 04	46 3	19 25 47	0 19 45	47 38	20				22	21
44	41 59	17 40	42 48	18 1	43 36	18 24 44	25 18 43	45 13	19 05	46 2	19 26 47	0 19 46	47 37	20				23	22
46	41 58	17 41	42 47	18 2	43 35	18 25 44	24 18 44	45 12	19 06	46 1	19 27 47	0 19 47	47 36	20				24	23
48	41 57	17 41	42 45	18 3	43 33	18 26 44	23 18 44	45 11	19 07	46 0	19 28 47	0 19 48	47 35	20				25	24
50	41 56	17 42	42 44	18 4	43 32	18 27 44	22 18 45	45 10	19 08	45 59	19 29 47	0 19 49	47 34	20				26	25
52	41 55	17 43	42 43	18 5	43 31	18 28 44	21 18 46	45 9	19 09	45 58	19 30 47	0 19 50	47 33	20				27	26
54	41 54	17 44	42 42	18 6	43 30	18 29 44	20 18 47	45 8	19 10	45 57	19 31 47	0 19 51	47 32	20				28	27
56	41 53	17 45	42 41	18 7	43 29	18 30 44	19 18 48	45 7	19 11	45 56	19 32 47	0 19 52	47 31	20				29	28
58	41 52	17 46	42 40	18 8	43 28	18 31 44	18 18 49	45 6	19 12	45 55	19 33 47	0 19 53	47 30	20				30	29
37°		54'	55'	56'	57'	58'	59'	60'	61'										
0'	41 51	17 46	42 39	18 9	43 27	18 32 44	17 18 50	45 5	19 13	45 54	19 34 47	0 19 54	47 29	20				31	30
2	41 50	17 47	42 38	18 10	43 26	18 33 44	16 18 51	45 4	19 14	45 53	19 35 47	0 19 55	47 28	20				32	31
4	41 49	17 48	42 37	18 11	43 25	18 34 44	15 18 52	45 3	19 15	45 52	19 36 47	0 19 56	47 27	20				33	32
6	41 48	17 49	42 36	18 12	43 24	18 35 44	14 18 53	45 2	19 16	45 51	19 37 47	0 19 57	47 26	20				34	33
8	41 47	17 50	42 35	18 13	43 23	18 36 44	13 18 54	45 1	19 17	45 50	19 38 47	0 19 58	47 25	20				35	34
10	41 46	17 51	42 34	18 14	43 22	18 37 44	12 18 55	45 0	19 18	45 49	19 39 47	0 19 59	47 24	20				36	35
12	41 45	17 52	42 33	18 15	43 21	18 38 44	11 18 56	44 59	19 19	45 48	19 40 47	0 20 00	47 23	20				37	36
14	41 44	17 53	42 32	18 16	43 20	18 39 44	10 18 57	44 58	19 20	45 47	19 41 47	0 20 01	47 22	20				38	37
16	41 43	17 53	42 30	18 17	43 18	18 40 44	9 18 58	44 57	19 21	45 46	19 42 47	0 20 02	47 21	20				39	38
18	41 42	17 54	42 29	18 18	43 17	18 41 44	8 18 59	44 56	19 22	45 45	19 43 47	0 20 03	47 20	20				40	39
20	41 41	17 55	42 28	18 19	43 16	18 42 44	7 18 59	44 55	19 23	45 44	19 44 47	0 20 04	47 19	20				41	40
22	41 40	17 56	42 27	18 20	43 15	18 43 44	6 18 59	44 54	19 24	45 43	19 45 47	0 20 05	47 18	20				42	41
24	41 39	17 57	42 26	18 21	43 14	18 44 44	5 18 59	44 53	19 25	45 42	19 46 47	0 20 06	47 17	20				43	42
26	41 38	17 58	42 25	18 22	43 13	18 45 44	4 18 59	44 52	19 26	45 41	19 47 47	0 20 07	47 16	20				44	43
28	41 37	17 59	42 24	18 23	43 12	18 46 44	3 18 59	44 51	19 27	45 40	19 48 47	0 20 08	47 15	20				45	44
30	41 36	17 59	42 23	18 24	43 11	18 47 44	2 18 59	44 50	19 28	45 39	19 49 47	0 20 09	47 14	20				46	45
32	41 35	18 0	42 22	18 25	43 10	18 48 44	1 18 59	44 49	19 29	45 38	19 50 47	0 20 10	47 13	20				47	46
34	41 34	18 1	42 21	18 26	43 9	18 49 44	0 18 59	44 48	19 30	45 37	19 51 47	0 20 11	47 12	20				48	47
36	41 33	18 2	42 20	18 27	43 8	18 50 44	0 18 59	44 47	19 31	45 36	19 52 47	0 20 12	47 11	20				49	48
38	41 32	18 3	42 19	18 28	43 7	18 51 44	0 18 59	44 46	19 32	45 35	19 53 47	0 20 13	47 10	20				50	49
40	41 31	18 4	42 18	18 29	43 6	18 52 44	0 18 59	44 45	19 33	45 34	19 54 47	0 20 14	47 9	20				51	50
42	41 30	18 5	42 17	18 30	43 5	18 53 44	0 18 59	44 44	19 34	45 33	19 55 47	0 20 15	47 8	20				52	51
44	41 29	18 6	42 16	18 31	43 4	18 54 44	0 18 59	44 43	19 35	45 32	19 56 47	0 20 16	47 7	20				53	52
46	41 28	18 7	42 15	18 32	43 3	18 55 44	0 18 59	44 42	19 36	45 31	19 57 47	0 20 17	47 6	20				54	53
48	41 27	18 8	42 14	18 33	43 2	18 56 44	0 18 59	44 41	19 37	45 30	19 58 47	0 20 18	47 5	20				55	54
50	41 26	18 9	42 13	18 34	43 1	18 57 44	0 18 59	44 40	19 38	45 29	19 59 47	0 20 19	47 4	20				56	55
52	41 25	18 10	42 12	18 35	43 0	18 58 44	0 18 59	44 39	19 39	45 28	20 00 47	0 20 20	47 3	20				57	56
54	41 24	18 11	42 11	18 36	42 59	18 59 44	0 18 59	44 38	19 40	45 27	20 01 47	0 20 21	47 2	20				58	57
56	41 23	18 12	42 10	18 37	42 58	19 00 44	0 18 59	44 37	19 41	45 26	20 02 47	0 20 22	47 1	20				59	58
58	41 22	18 13	42 9	18 38	42 57	19 01 44	0 18 59	44 36	19 42	45 25	20 03 47	0 20 23	47 0	20				60	59
60	41 21	18 14	42 8	18 39	42 56	19 02 44	0 18 59	44 35	19 43	45 24	20 04 47	0 20 24	46 59	20				61	60

(38° and 39°) The Correction of the Moon's Altitude, and the Aux. Angle A. (w.)

App. Alt.	Minutes of Moon's Hor. Parallax.														Seconds of H. P.	
	54'		55'		56'		57'		58'		59'		60'		61'	
38°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°
0'	41 19	18 12	42 7	18 34	42 54	18 55	43 41	19 17	44 29	19 39	45 16	20 0	46 3	20 22	46 51	20 43
2	41 18	18 13	42 6	18 35	42 53	18 56	43 40	19 18	44 28	19 39	45 15	20 1	46 2	20 23	46 49	20 44
4	41 17	18 14	42 5	18 35	42 52	18 57	43 39	19 19	44 26	19 40	45 14	20 2	46 1	20 24	46 48	20 45
6	41 16	18 15	42 3	18 36	42 51	18 58	43 38	19 20	44 25	19 41	45 12	20 3	46 0	20 25	46 47	20 46
8	41 15	18 15	42 2	18 37	42 50	18 59	43 37	19 21	44 24	19 42	45 11	20 4	45 58	20 26	46 46	20 47
10	41 14	18 16	42 1	18 38	42 48	19 0	43 36	19 21	44 23	19 43	45 10	20 5	45 57	20 27	46 44	20 48
12	41 13	18 17	42 0	18 39	42 47	19 1	43 34	19 22	44 22	19 44	45 9	20 6	45 56	20 27	46 43	20 49
14	41 12	18 18	41 59	18 40	42 46	19 1	43 33	19 23	44 20	19 45	45 8	20 7	45 55	20 28	46 42	20 50
16	41 11	18 19	41 58	18 41	42 45	19 2	43 32	19 24	44 19	19 46	45 6	20 8	45 54	20 29	46 41	20 51
18	41 10	18 20	41 57	18 41	42 44	19 3	43 31	19 25	44 18	19 47	45 5	20 8	45 52	20 30	46 39	20 52
20	41 9	18 20	41 56	18 42	42 43	19 4	43 30	19 26	44 17	19 48	45 4	20 9	45 51	20 31	46 38	20 53
22	41 8	18 21	41 55	18 43	42 42	19 5	43 29	19 27	44 16	19 48	45 3	20 10	45 50	20 32	46 37	20 54
24	41 6	18 22	41 53	18 44	42 41	19 6	43 28	19 28	44 15	19 49	45 2	20 11	45 49	20 33	46 36	20 55
26	41 5	18 23	41 52	18 45	42 39	19 7	43 26	19 29	44 13	19 50	45 0	20 12	45 47	20 34	46 34	20 56
28	41 4	18 24	41 51	18 46	42 38	19 8	43 25	19 29	44 12	19 51	44 59	20 13	45 46	20 35	46 33	20 57
30	41 3	18 25	41 50	18 47	42 37	19 8	43 24	19 30	44 11	19 52	44 58	20 14	45 45	20 36	46 32	20 58
32	41 2	18 26	41 49	18 47	42 36	19 9	43 23	19 31	44 10	19 53	44 57	20 15	45 44	20 37	46 31	20 59
34	41 1	18 26	41 48	18 48	42 35	19 10	43 22	19 32	44 9	19 54	44 56	20 16	45 43	20 38	46 30	21 0
36	41 0	18 27	41 47	18 49	42 34	19 11	43 21	19 33	44 8	19 55	44 54	20 17	45 41	20 39	46 28	21 1
38	40 59	18 28	41 46	18 50	42 33	19 12	43 20	19 34	44 6	19 56	44 53	20 18	45 40	20 40	46 27	21 2
40	40 58	18 29	41 45	18 51	42 31	19 13	43 18	19 35	44 5	19 57	44 52	20 18	45 39	20 40	46 26	21 3
42	40 57	18 30	41 44	18 52	42 30	19 14	43 17	19 36	44 4	19 58	44 51	20 19	45 38	20 41	46 25	21 4
44	40 56	18 31	41 42	18 53	42 29	19 15	43 16	19 36	44 3	19 58	44 50	20 20	45 36	20 42	46 23	21 5
46	40 55	18 31	41 41	18 53	42 28	19 15	43 15	19 37	44 2	19 59	44 48	20 21	45 35	20 43	46 22	21 6
48	40 53	18 32	41 40	18 54	42 27	19 16	43 14	19 38	44 0	20 0	44 47	20 22	45 34	20 44	46 21	21 7
50	40 52	18 33	41 39	18 55	42 26	19 17	43 13	19 39	43 59	20 1	44 46	20 23	45 33	20 45	46 20	21 8
52	40 51	18 34	41 38	18 56	42 25	19 18	43 11	19 40	43 58	20 2	44 45	20 24	45 32	20 46	46 18	21 9
54	40 50	18 35	41 37	18 57	42 24	19 19	43 10	19 41	43 57	20 3	44 44	20 25	45 30	20 47	46 17	21 10
56	40 49	18 36	41 36	18 58	42 22	19 20	43 9	19 42	43 56	20 4	44 42	20 26	45 29	20 48	46 16	21 11
58	40 48	18 37	41 35	18 59	42 21	19 21	43 8	19 43	43 55	20 5	44 41	20 27	45 28	20 49	46 15	21 12
39°	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	58'	59'	60'	61'
0'	40 47	18 37	41 33	18 59	42 20	19 21	43 7	19 44	43 53	20 6	44 40	20 28	45 27	20 50	46 13	21 12
2	40 46	18 38	41 32	19 0	42 19	19 22	43 6	19 44	43 52	20 7	44 39	20 29	45 26	20 51	46 12	21 13
4	40 45	18 39	41 31	19 1	42 18	19 23	43 4	19 45	43 51	20 7	44 38	20 30	45 24	20 52	46 11	21 14
6	40 44	18 40	41 30	19 2	42 17	19 24	43 3	19 46	43 50	20 8	44 36	20 30	45 23	20 53	46 10	21 15
8	40 42	18 41	41 29	19 3	42 16	19 25	43 2	19 47	43 49	20 9	44 35	20 31	45 22	20 53	46 8	21 16
10	40 41	18 42	41 28	19 4	42 14	19 26	43 1	19 48	43 47	20 10	44 34	20 32	45 21	20 54	46 7	21 17
12	40 40	18 42	41 27	19 5	42 13	19 27	43 0	19 49	43 46	20 11	44 33	20 33	45 19	20 55	46 6	21 18
14	40 39	18 43	41 26	19 6	42 12	19 28	42 58	19 50	43 45	20 12	44 31	20 34	45 18	20 56	46 5	21 19
16	40 38	18 44	41 24	19 6	42 11	19 28	42 57	19 51	43 44	20 13	44 30	20 35	45 17	20 57	46 3	21 20
18	40 37	18 45	41 23	19 7	42 10	19 29	42 56	19 51	43 43	20 14	44 29	20 36	45 16	20 58	46 2	21 21
20	40 36	18 46	41 22	19 8	42 9	19 30	42 55	19 52	43 41	20 15	44 28	20 37	45 14	20 59	46 1	21 22
22	40 35	18 47	41 21	19 8	42 7	19 31	42 54	19 53	43 40	20 16	44 27	20 38	45 13	21 0	45 59	21 22
24	40 33	18 47	41 20	19 10	42 6	19 32	42 53	19 54	43 39	20 16	44 25	20 39	45 12	21 1	45 58	21 23
26	40 32	18 48	41 19	19 10	42 5	19 33	42 51	19 55	43 38	20 17	44 24	20 40	45 10	21 2	45 57	21 24
28	40 31	18 49	41 18	19 11	42 4	19 34	42 50	19 56	43 37	20 18	44 23	20 40	45 9	21 3	45 56	21 25
30	40 30	18 50	41 16	19 12	42 3	19 34	42 49	19 57	43 35	20 19	44 22	20 41	45 8	21 4	45 54	21 26
32	40 29	18 51	41 15	19 13	42 2	19 35	42 48	19 58	43 34	20 20	44 20	20 42	45 7	21 5	45 53	21 27
34	40 28	18 52	41 14	19 14	42 0	19 36	42 47	19 58	43 33	20 21	44 19	20 43	45 6	21 6	45 52	21 28
36	40 27	18 53	41 13	19 15	41 59	19 37	42 46	19 59	43 32	20 22	44 18	20 44	45 5	21 7	45 51	21 29
38	40 26	18 53	41 12	19 16	41 58	19 38	42 44	20 0	43 31	20 23	44 17	20 45	45 4	21 8	45 49	21 30
40	40 25	18 54	41 11	19 16	41 57	19 39	42 43	20 1	43 29	20 23	44 16	20 46	45 3	21 9	45 48	21 31
42	40 23	18 55	41 10	19 17	41 56	19 40	42 42	20 2	43 28	20 24	44 14	20 47	45 2	21 10	45 47	21 32
44	40 22	18 56	41 9	19 18	41 54	19 40	42 41	20 3	43 27	20 25	44 13	20 48	45 1	21 11	45 45	21 33
46	40 21	18 56	41 7	19 19	41 53	19 41	42 40	20 4	43 26	20 26	44 12	20 49	44 58	21 12	45 44	21 34
48	40 20	18 57	41 6	19 20	41 52	19 42	42 38	20 5	43 25	20 27	44 11	20 49	44 57	21 13	45 43	21 35
50	40 19	18 58	41 5	19 21	41 51	19 43	42 37	20 6	43 23	20 28	44 9	20 50	44 56	21 14	45 42	21 36
52	40 18	18 59	41 4	19 21	41 50	19 44	42 36	20 6	43 22	20 29	44 8	20 51	44 54	21 15	45 40	21 37
54	40 17	19 0	41 3	19 22	41 49	19 45	42 35	20 7	43 21	20 30	44 7	20 52	44 53	21 16	45 39	21 38
56	40 16	19 1	41 2	19 23	41 48	19 46	42 34	20 8	43 20	20 31	44 6	20 53	44 52	21 17	45 38	21 39
58	40 15	19 2	41 1	19 24	41 47	19 47	42 33	20 9	43 19	20 32	44 5	20 54	44 51	21 18	45 37	21 40

(w.)		The Correction of the Moon's Altitude, and the Aux. Angle A.																(40° and 41°)		
App Alt.		Minutes of Moon's Hor. Parallax.																Sec. of L.		
		54'		55'		56'		57'		58'		59'		60'		61'				
40°		Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°			
0'	40	13	19	2	40	59	19	25	41	45	19	47	42	31	20	10	43	17	1	
2	40	12	19	3	40	58	19	26	41	44	19	46	42	30	20	11	43	16	2	
4	40	11	19	4	40	57	19	26	41	43	19	45	42	29	20	12	43	15	3	
6	40	10	19	5	40	56	19	27	41	42	19	50	42	28	20	13	43	14	4	
8	40	9	19	6	40	55	19	28	41	41	19	51	42	27	20	13	43	12	5	
10	40	8	19	7	40	54	19	29	41	39	19	52	42	25	20	14	43	11	6	
12	40	6	19	7	40	52	19	30	41	38	19	52	42	24	20	15	43	10	7	
14	40	5	19	8	40	51	19	31	41	37	19	53	42	23	20	16	43	9	8	
16	40	4	19	9	40	50	19	32	41	36	19	54	42	22	20	17	43	7	9	
18	40	3	19	10	40	49	19	32	41	35	19	55	42	20	20	18	43	6	10	
20	40	2	19	10	40	48	19	33	41	33	19	56	42	19	20	18	43	5	11	
22	40	1	19	11	40	47	19	34	41	32	19	57	42	18	20	19	43	4	12	
24	40	0	19	12	40	45	19	35	41	31	19	57	42	17	20	20	43	2	13	
26	39	58	19	13	40	44	19	36	41	30	19	58	42	16	20	21	43	1	14	
28	39	57	19	14	40	43	19	36	41	29	19	59	42	14	20	22	43	0	15	
30	39	56	19	15	40	42	19	37	41	27	20	0	42	13	20	23	42	59	16	
32	39	55	19	15	40	41	19	38	41	26	20	1	42	12	20	24	42	58	17	
34	39	54	19	16	40	40	19	39	41	25	20	2	42	11	20	25	42	56	18	
36	39	53	19	17	40	39	19	40	41	24	20	3	42	10	20	25	42	55	19	
38	39	52	19	18	40	37	19	41	41	23	20	3	42	8	20	26	42	54	20	
40	39	50	19	19	40	36	19	41	41	22	20	4	42	7	20	27	42	53	21	
42	39	49	19	19	40	35	19	42	41	20	20	5	42	6	20	28	42	51	22	
44	39	48	19	20	40	34	19	43	41	19	20	6	42	5	20	29	42	50	23	
46	39	47	19	21	40	33	19	44	41	18	20	7	42	3	20	30	42	49	24	
48	39	46	19	22	40	31	19	45	41	17	20	8	42	2	20	31	42	48	25	
50	39	45	19	23	40	30	19	46	41	16	20	9	42	1	20	31	42	46	26	
52	39	44	19	24	40	29	19	46	41	14	20	9	42	0	20	32	42	45	27	
54	39	43	19	24	40	28	19	47	41	13	20	10	41	59	20	33	42	44	28	
56	39	41	19	25	40	27	19	48	41	12	20	11	41	57	20	34	42	43	29	
58	39	40	19	26	40	26	19	49	41	11	20	12	41	56	20	35	42	41	30	
41°		54'		55'		56'		57'		58'		59'		60'		61'				
0'	39	39	19	27	40	24	19	50	41	10	20	13	41	55	20	36	42	40	20	31
2	39	38	19	28	40	23	19	51	41	8	20	14	41	54	20	37	42	39	21	32
4	39	37	19	28	40	22	19	51	41	7	20	14	41	52	20	37	42	38	21	33
6	39	36	19	29	40	21	19	52	41	6	20	15	41	51	20	38	42	36	21	34
8	39	34	19	30	40	20	19	53	41	5	20	16	41	50	20	39	42	35	21	35
10	39	33	19	31	40	18	19	54	41	4	20	17	41	49	20	40	42	34	21	36
12	39	32	19	32	40	17	19	55	41	2	20	18	41	47	20	41	42	33	21	37
14	39	31	19	32	40	16	19	56	41	1	20	19	41	46	20	42	42	31	21	38
16	39	30	19	33	40	15	19	56	41	0	20	20	41	45	20	43	42	30	21	39
18	39	28	19	34	40	14	19	57	40	59	20	20	41	44	20	43	42	29	21	40
20	39	27	19	35	40	12	19	58	40	57	20	21	41	42	20	44	42	27	21	41
22	39	26	19	36	40	11	19	59	40	56	20	22	41	41	20	45	42	26	21	42
24	39	25	19	37	40	10	20	0	40	55	20	23	41	40	20	46	42	25	21	43
26	39	24	19	37	40	9	20	0	40	54	20	24	41	39	20	47	42	24	21	44
28	39	23	19	38	40	8	20	1	40	52	20	25	41	38	20	48	42	22	21	45
30	39	21	19	39	40	6	20	2	40	51	20	25	41	36	20	49	42	21	21	46
32	39	20	19	40	40	5	20	3	40	50	20	26	41	35	20	49	42	20	21	47
34	39	19	19	41	40	4	20	4	40	49	20	27	41	34	20	50	42	19	21	48
36	39	18	19	41	40	3	20	5	40	48	20	28	41	33	20	51	42	17	21	49
38	39	17	19	42	40	2	20	6	40	47	20	29	41	31	20	52	42	16	21	50
40	39	16	19	43	40	0	20	6	40	45	20	29	41	30	20	53	42	15	21	51
42	39	14	19	44	39	59	20	7	40	44	20	30	41	29	20	54	42	14	21	52
44	39	13	19	45	39	58	20	8	40	43	20	31	41	28	20	54	42	12	21	53
46	39	12	19	45	39	57	20	9	40	42	20	32	41	26	20	55	42	11	21	54
48	39	11	19	46	39	56	20	9	40	40	20	33	41	25	20	56	42	10	21	55
50	39	10	19	47	39	54	20	10	40	39	20	34	41	24	20	57	42	9	21	56
52	39	9	19	48	39	53	20	11	40	38	20	34	41	23	20	58	42	7	21	57
54	39	7	19	49	39	52	20	12	40	37	20	35	41	21	20	59	42	6	21	58
56	39	6	19	50	39	51	20	13	40	36	20	36	41	20	21	0	42	5	21	59
58	39	5	19	50	39	50	20	13	40	34	20	37	41	19	21	0	42	4	21	60

(w.)		The Correction of the Moon's Altitude, and the Aux. Angle A. (44° and 45°)																				Seconds of H. P.	
App. Alt.		Minutes of Moon's Hor. Parallax.																				C	A
		54'		55'		56'		57'		58'		59'		60'		61'							
44°	Corr.	A 60°		Corr.		A 60°		Corr.		A 60°		Corr.		A 60°		Corr.		A 60°		Corr.		A 60°	
		+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
0'	37 51	20 38	38 34	21 4	39 17	21 29	40 1	21 55	40 44	22 21	41 27	22 47	42 10	23 13	42 53	23 38	43 21	24 4	44 17	24 50	45 13	25 26	46 9
2	37 50	20 39	38 33	21 5	39 16	21 30	39 59	21 56	40 42	22 22	41 26	22 47	42 9	23 13	42 52	23 39	43 20	24 4	44 16	24 49	45 12	25 25	46 8
4	37 49	20 40	38 32	21 6	39 15	21 31	39 58	21 57	40 41	22 22	41 24	22 48	42 7	23 14	42 50	23 39	43 20	24 4	44 16	24 49	45 12	25 25	46 8
6	37 47	20 40	38 30	21 6	39 14	21 32	39 57	21 57	40 40	22 23	41 23	22 48	42 6	23 14	42 49	23 40	43 21	24 5	44 17	24 50	45 13	25 26	46 9
8	37 46	20 41	38 29	21 7	39 12	21 32	39 55	21 58	40 38	22 23	41 21	22 49	42 5	23 15	42 48	23 40	43 21	24 5	44 17	24 50	45 13	25 26	46 9
10	37 45	20 42	38 28	21 7	39 11	21 33	39 54	21 59	40 37	22 24	41 20	22 50	42 3	23 15	42 46	23 41	43 22	24 6	44 18	24 51	45 14	25 27	46 10
12	37 44	20 43	38 27	21 8	39 10	21 34	39 53	21 59	40 36	22 25	41 19	22 50	42 2	23 16	42 45	23 41	43 22	24 6	44 18	24 51	45 14	25 27	46 10
14	37 42	20 43	38 25	21 9	39 8	21 34	39 51	22 0	40 34	22 25	41 17	22 51	42 0	23 16	42 43	23 42	43 23	24 7	44 19	24 52	45 15	25 28	46 11
16	37 41	20 44	38 24	21 10	39 7	21 35	39 50	22 1	40 33	22 26	41 16	22 51	41 59	23 17	42 42	23 42	43 23	24 7	44 19	24 52	45 15	25 28	46 11
18	37 40	20 45	38 23	21 11	39 6	21 36	39 49	22 1	40 32	22 27	41 15	22 52	41 58	23 17	42 41	23 43	43 24	24 8	44 20	24 53	45 16	25 29	46 12
20	37 39	20 46	38 21	21 11	39 4	21 36	39 47	22 2	40 30	22 27	41 13	22 53	41 56	23 18	42 39	23 43	43 25	24 8	44 20	24 53	45 16	25 29	46 12
22	37 37	20 47	38 20	21 12	39 3	21 37	39 46	22 2	40 29	22 28	41 12	22 53	41 55	23 18	42 38	23 44	43 25	24 9	44 21	24 54	45 17	25 30	46 13
24	37 36	20 47	38 19	21 13	39 2	21 38	39 45	22 3	40 28	22 28	41 10	22 54	41 53	23 19	42 36	23 44	43 26	24 9	44 21	24 54	45 17	25 30	46 13
26	37 35	20 48	38 18	21 13	39 1	21 39	39 43	22 4	40 26	22 29	41 9	22 54	41 52	23 20	42 35	23 45	43 26	24 10	44 22	24 55	45 18	25 31	46 14
28	37 34	20 49	38 16	21 14	38 59	21 39	39 42	22 5	40 25	22 30	41 8	22 55	41 51	23 20	42 33	23 48	43 27	24 10	44 22	24 55	45 18	25 31	46 14
30	37 32	20 50	38 15	21 15	38 58	21 40	39 41	22 5	40 24	22 30	41 6	22 56	41 49	23 21	42 32	23 46	43 28	24 11	44 23	24 56	45 19	25 32	46 15
32	37 31	20 50	38 14	21 16	38 57	21 41	39 39	22 6	40 22	22 31	41 5	22 56	41 48	23 21	42 31	23 46	43 28	24 11	44 23	24 56	45 19	25 32	46 15
34	37 30	20 51	38 13	21 16	38 55	21 41	39 38	22 7	40 21	22 32	41 4	22 57	41 46	23 22	42 29	23 47	43 29	24 11	44 23	24 56	45 19	25 32	46 15
36	37 29	20 52	38 11	21 17	38 54	21 42	39 37	22 7	40 19	22 32	41 2	22 57	41 45	23 22	42 28	23 48	43 30	24 12	44 24	24 57	45 20	25 33	46 16
38	37 27	20 53	38 10	21 18	38 53	21 43	39 36	22 8	40 18	22 33	41 1	22 58	41 44	23 23	42 26	23 48	43 30	24 12	44 24	24 57	45 20	25 33	46 16
40	37 26	20 54	38 9	21 18	38 51	21 43	39 34	22 8	40 17	22 33	40 59	22 58	41 42	23 24	42 25	23 49	43 31	24 12	44 24	24 57	45 20	25 33	46 16
42	37 25	20 54	38 8	21 19	38 50	21 44	39 33	22 9	40 15	22 34	40 58	22 59	41 41	23 24	42 23	23 49	43 31	24 13	44 25	24 58	45 21	25 34	46 17
44	37 24	20 55	38 6	21 20	38 48	21 45	39 32	22 10	40 14	22 35	40 57	23 0	41 39	23 25	42 22	23 50	43 32	24 13	44 25	24 58	45 21	25 34	46 17
46	37 22	20 56	38 5	21 21	38 46	21 46	39 30	22 11	40 13	22 35	40 55	23 0	41 38	23 25	42 21	23 50	43 32	24 13	44 25	24 58	45 21	25 34	46 17
48	37 21	20 56	38 4	21 21	38 46	21 46	39 29	22 11	40 11	22 36	40 54	23 1	41 37	23 26	42 19	23 51	43 33	24 14	44 26	24 59	45 22	25 35	46 18
50	37 20	20 57	38 3	21 22	38 45	21 47	39 28	22 12	40 10	22 37	40 53	23 1	41 35	23 26	42 18	23 51	43 33	24 14	44 26	24 59	45 22	25 35	46 18
52	37 19	20 58	38 2	21 23	38 44	21 48	39 26	22 13	40 9	22 37	40 51	23 1	41 34	23 27	42 16	23 52	43 34	24 14	44 26	24 59	45 22	25 35	46 18
54	37 17	20 59	38 0	21 24	38 42	21 48	39 25	22 13	40 7	22 38	40 50	23 1	41 32	23 28	42 15	23 52	43 34	24 15	44 27	25 0	45 23	25 36	46 19
56	37 16	21 0	37 59	21 25	38 41	21 49	39 24	22 14	40 6	22 39	40 49	23 1	41 31	23 28	42 14	23 53	43 35	24 15	44 27	25 0	45 23	25 36	46 19
58	37 15	21 0	37 57	21 25	38 40	21 50	39 22	22 15	40 5	22 39	40 47	23 1	41 30	23 29	42 12	23 53	43 35	24 15	44 27	25 0	45 23	25 36	46 19
45°	54'	55'	56'	57'	58'	59'	60'	61'															
0'	37 14	21 1	37 56	21 26	38 38	21 56	39 21	22 15	40 3	22 40	40 46	23 5	41 28	23 29	42 11	23 54	43 36	24 16	44 28	25 1	45 24	25 37	46 20
2	37 12	21 2	37 55	21 27	38 37	21 51	39 20	22 16	40 2	22 41	40 44	23 5	41 27	23 30	42 9	23 55	43 35	24 16	44 27	25 0	45 23	25 36	46 19
4	37 11	21 3	37 53	21 27	38 36	21 52	39 18	22 17	40 1	22 42	40 43	23 5	41 25	23 31	42 8	23 56	43 34	24 16	44 27	25 0	45 23	25 36	46 19
6	37 10	21 3	37 52	21 28	38 35	21 53	39 17	22 18	39 59	22 42	40 42	23 7	41 24	23 32	42 6	23 57	43 33	24 16	44 27	25 0	45 23	25 36	46 19
8	37 8	21 4	37 51	21 29	38 33	21 54	39 15	22 18	39 58	22 43	40 40	23 8	41 23	23 33	42 5	23 57	43 32	24 16	44 27	25 0	45 23	25 36	46 19
10	37 7	21 5	37 49	21 30	38 32	21 54	39 14	22 19	39 56	22 44	40 39	23 9	41 21	23 33	42 3	23 58	43 31	24 16	44 27	25 0	45 23	25 36	46 19
12	37 6	21 6	37 48	21 30	38 31	21 55	39 13	22 20	39 55	22 45	40 37	23 10	41 20	23 33	42 2	23 59	43 30	24 16	44 27	25 0	45 23	25 36	46 19
14	37 5	21 6	37 47	21 31	38 29	21 56	39 11	22 21	39 54	22 46	40 36	23 10	41 18	23 35	42 0	24 0	43 29	24 16	44 27	25 0	45 23	25 36	46 19
16	37 3	21 7	37 46	21 32	38 28	21 57	39 10	22 22	39 52	22 46	40 35	23 11	41 17	23 36	41 59	24 1	43 28	24 17	44 28	25 1	45 24	25 37	46 20
18	37 2	21 8	37 44	21 33	38 27	21 58	39 9	22 22	39 51	22 47	40 33	23 12	41 15	23 37	41 58	24 2	43 27	24 17	44 28	25 1	45 24	25 37	46 20
20	37 1	21 9	37 43	21 33	38 25	21 58	39 7	22 23	39 49	22 48	40 32	23 13	41 14	23 38	41 56	24 3	43 26	24 17	44 28	25 1	45 24	25 37	46 20
22	37 0	21 9	37 42	21 34	38 24	21 59	39 6	22 24	39 48	22 49	40 30	23 14	41 12	23 39	41 55	24 3	43 25	24 17	44 28	25 1	45 24	25 37	46 20
24	36 58	21 10	37 40	21 35	38 23	22 0	39 5	22 25	39 47	22 50	40 29	23 15	41 11	23 39	41 53	24 4	43 24	24 18	44 29	25 2	45 25	25 38	46 21
26	36 57	21 11	37 39	21 36	38 21	22 1	39 3	22 26	39 45	22 50	40 27	23 15	41 10	23 40	41 52	24 4	43 23	24 18	44 29	25 2	45 25	25 38	46 21
28	36 56	21 12	37 38	21 37	38 20	22 1	39 2	22 26	39 44	22 51	40 26	23 16	41 8	23 41	41 50	24 4	43 22	24 18	44 29	25 2	45 25	25 38	46 21
30	36 54	21 12	37 36	21 37	38 19	22 2	39 1	22 27	39 43	22 52	40 25	23 17	41 7	23 42	41 49	24 4	43 21	24 18	44 29	25 2	45 25	25 38	46 21

(46° and 47°)		The Correction of the Moon's Altitude, and the Aux. Angle A.														(w.)	
App. Alt.	Minutes of Moon's Hor. Parallax.														Seconds of H. P.		
	54'		55'		56'		57'		58'		59'		60'		61'		
46°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	
0'	36 35	21 24 37 17	21 49	37 59	22 14	38 40	22 39	39 22	23 4	40	23 29	40 45	23 55	41 27	24 20	1 1 0	
2	36 34	21 24 37 16	21 50	37 57	22 15	38 39	22 40	39 21	23 5	40	23 30	40 44	23 55	41 26	24 21	2 1 1	
4	36 33	21 25 37 14	21 50	37 56	22 16	38 38	22 41	39 19	23 6	40	23 31	40 42	23 56	41 24	24 21	3 2 2	
6	36 31	21 26 37 13	21 51	37 55	22 16	38 36	22 41	39 18	23 7	39 59	23 32	40 41	23 57	41 23	24 22	4 3 3	
8	36 30	21 27 37 12	21 52	37 53	22 17	38 35	22 42	39 16	23 8	39 58	23 33	40 40	23 58	41 21	24 23	5 4 4	
10	36 28	21 27 37 10	21 53	37 52	22 18	38 33	22 43	39 15	23 9	39 57	23 33	40 38	23 59	41 20	24 24	6 5 5	
12	36 27	21 28 37 9	21 53	37 51	22 19	38 32	22 44	39 14	23 10	39 55	23 34	40 37	24 0	41 18	24 25	7 6 6	
14	36 26	21 29 37 8	21 54	37 49	22 19	38 31	22 45	39 12	23 11	39 54	23 35	40 35	24 0	41 17	24 26	8 7 7	
16	36 25	21 30 37 6	21 55	37 48	22 20	38 29	22 45	39 11	23 12	39 52	23 36	40 34	24 1	41 15	24 26	9 8 8	
18	36 23	21 30 37 5	21 56	37 46	22 21	38 28	22 46	39 9	23 13	39 51	23 37	40 32	24 1	41 14	24 27	10 9 9	
20	36 22	21 31 37 4	21 56	37 45	22 22	38 26	22 47	39 8	23 14	39 49	23 37	40 31	24 2	41 12	24 28	11 10 10	
22	36 21	21 32 37 2	21 57	37 44	22 22	38 25	22 48	39 7	23 15	39 48	23 38	40 29	24 2	41 11	24 29	12 11 11	
24	36 20	21 33 37 1	21 58	37 42	22 23	38 24	22 48	39 5	23 16	39 47	23 39	40 28	24 3	41 9	24 30	13 12 12	
26	36 18	21 33 37 0	21 58	37 41	22 24	38 22	22 49	39 4	23 17	39 45	23 40	40 26	24 3	41 8	24 30	14 13 13	
28	36 17	21 34 36 58	21 59	37 40	22 25	38 21	22 50	39 3	23 18	39 44	23 41	40 25	24 4	41 6	24 31	15 14 14	
30	36 16	21 35 36 57	22 0	37 38	22 25	38 20	22 51	39 0	23 19	39 42	23 41	40 23	24 4	41 5	24 32	16 15 15	
32	36 14	21 36 36 56	22 0	37 37	22 26	38 18	22 52	38 59	23 20	39 41	23 42	40 22	24 4	41 4	24 33	17 16 16	
34	36 13	21 36 36 54	22 1	37 36	22 27	38 17	22 52	38 58	23 21	39 39	23 43	40 21	24 4	41 3	24 34	18 17 17	
36	36 12	21 37 36 53	22 2	37 34	22 28	38 15	22 53	38 57	23 22	39 38	23 44	40 19	24 4	41 2	24 35	19 18 18	
38	36 10	21 38 36 52	22 3	37 33	22 29	38 14	22 54	38 55	23 23	39 36	23 45	40 18	24 4	41 1	24 36	20 19 19	
40	36 9	21 38 36 50	22 3	37 31	22 29	38 13	22 55	38 54	23 24	39 35	23 45	40 16	24 4	41 0	24 37	21 20 20	
42	36 8	21 39 36 49	22 5	37 30	22 30	38 11	22 55	38 52	23 25	39 34	23 46	40 15	24 4	41 0	24 38	22 21 21	
44	36 6	21 40 36 48	22 5	37 29	22 31	38 10	22 56	38 51	23 26	39 32	23 47	40 13	24 4	41 0	24 39	23 22 22	
46	36 5	21 41 36 46	22 6	37 27	22 32	38 8	22 57	38 50	23 27	39 31	23 48	40 12	24 4	41 0	24 40	24 23 23	
48	36 4	21 41 36 45	22 7	37 26	22 32	38 7	22 58	38 48	23 28	39 29	23 49	40 10	24 4	41 0	24 41	25 24 24	
50	36 3	21 42 36 44	22 8	37 25	22 33	38 6	22 59	38 47	23 29	39 28	23 49	40 9	24 4	41 0	24 42	26 25 25	
52	36 1	21 43 36 42	22 8	37 23	22 34	38 4	22 59	38 45	23 30	39 26	23 50	40 7	24 4	41 0	24 43	27 26 26	
54	36 0	21 44 36 41	22 9	37 22	22 35	38 3	23 0	38 44	23 31	39 25	23 51	40 6	24 4	41 0	24 44	28 27 27	
56	35 59	21 44 36 40	22 10	37 21	22 35	38 2	23 1	38 43	23 32	39 24	23 52	40 5	24 4	41 0	24 45	29 28 28	
58	35 57	21 45 36 38	22 11	37 19	22 36	38 0	23 2	38 41	23 33	39 22	23 53	40 3	24 4	41 0	24 46	30 29 29	
47°	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	58'	59'	60'	61'	
0'	35 56	21 46 36 37	22 11	37 18	22 37	37 59	23 2	38 40	23 34	39 21	23 53	40 2	24 4	41 0	24 47	31 30 30	
2	35 55	21 47 36 36	22 12	37 17	22 38	37 57	23 3	38 38	23 35	39 19	23 54	40 0	24 4	41 0	24 48	32 31 31	
4	35 53	21 47 36 34	22 13	37 15	22 38	37 56	23 4	38 37	23 36	39 18	23 55	39 59	24 1	40 0	24 49	33 32 32	
6	35 52	21 48 36 33	22 14	37 14	22 39	37 55	23 5	38 36	23 37	39 16	23 56	39 57	24 1	40 0	24 50	34 33 33	
8	35 51	21 49 36 32	22 14	37 12	22 40	37 53	23 6	38 34	23 38	39 15	23 57	39 56	24 2	40 0	24 51	35 34 34	
10	35 49	21 49 36 30	22 15	37 11	22 41	37 52	23 7	38 33	23 39	39 13	23 58	39 54	24 2	40 0	24 52	36 35 35	
12	35 48	21 50 36 29	22 16	37 10	22 41	37 50	23 8	38 31	23 40	39 12	23 58	39 53	24 2	40 0	24 53	37 36 36	
14	35 47	21 51 36 28	22 17	37 8	22 42	37 49	23 9	38 30	23 41	39 11	23 59	39 51	24 2	40 0	24 54	38 37 37	
16	35 45	21 52 36 26	22 17	37 7	22 43	37 48	23 9	38 28	23 42	39 9	24 0	39 50	24 2	40 0	24 55	39 38 38	
18	35 44	21 52 36 25	22 18	37 5	22 44	37 46	23 9	38 27	23 43	39 8	24 1	39 48	24 2	40 0	24 56	40 39 39	
20	35 43	21 53 36 23	22 19	37 4	22 44	37 45	23 10	38 25	23 44	39 6	24 2	39 47	24 2	40 0	24 57	41 40 40	
22	35 41	21 54 36 22	22 20	37 2	22 45	37 43	23 11	38 24	23 45	39 5	24 3	39 45	24 2	40 0	24 58	42 41 41	
24	35 40	21 55 36 21	22 20	37 1	22 46	37 42	23 12	38 23	23 46	39 3	24 4	39 44	24 2	40 0	24 59	43 42 42	
26	35 39	21 55 36 19	22 21	37 0	22 47	37 41	23 12	38 21	23 47	39 2	24 5	39 42	24 3	40 0	24 59	44 43 43	
28	35 37	21 56 36 18	22 22	36 59	22 47	37 39	23 13	38 20	23 48	39 0	24 6	39 41	24 3	40 0	24 59	45 44 44	
30	35 36	21 57 36 17	22 22	36 57	22 48	37 38	23 14	38 18	23 49	38 59	24 7	39 39	24 3	40 0	24 59	46 45 45	
32	35 35	21 57 36 15	22 23	36 56	22 49	37 36	23 15	38 17	23 50	38 57	24 8	39 38	24 3	40 0	24 59	47 46 46	
34	35 33	21 58 36 14	22 24	36 55	22 50	37 35	23 15	38 15	23 51	38 56	24 9	39 37	24 3	40 0	24 59	48 47 47	
36	35 32	21 59 36 13	22 25	36 53	22 50	37 34	23 16	38 14	23 52	38 55	24 10	39 35	24 3	40 0	24 59	49 48 48	
38	35 31	22 0 36 11	22 25	36 52	22 51	37 32	23 17	38 13	23 53	38 53	24 11	39 34	24 3	40 0	24 59	50 49 49	
40	35 29	22 0 36 10	22 26	36 50	22 52	37 31	23 18	38 11	23 54	38 52	24 12	39 32	24 3	40 0	24 59	51 50 50	
42	35 28	22 1 36 9	22 27	36 49	22 53	37 29	23 18	38 10	23 55	38 50	24 13	39 31	24 3	40 0	24 59	52 51 51	
44	35 27	22 2 36 8	22 28	36 48	22 53	37 28	23 19	38 8	23 56	38 49	24 14	39 29	24 3	40 0	24 59	53 52 52	
46	35 26	22 3 36 6	22 28	36 46	22 54	37 27	23 20	38 7	23 57	38 47	24 15	39 28	24 3	40 0	24 59	54 53 53	
48	35 24	22 3 36 5	22 29	36 45	22 55	37 25	23 21	38 5	23 58	38 46	24 16	39 26	24 3	40 0	24 59	55 54 54	
50	35 23	22 4 36 4	22 30	36 43	22 56	37 24	23 21	38 4	23 59	38 44	24 17	39 25	24 3	40 0	24 59	56 55 55	
52	35 22	22 5 36 2	22 31	36 42	22 56	37 22	23 22	38 3	24 0	38 43	24 18	39 23	24 4	40 0	24 59	57 56 56	
54	35 20	22 5 36 1	22 31	36 41	22 57	37 21	23 23	38 1	24 1	38 41	24 19	39 22	24 4	40 0	24 59	58 57 57	
56	35 19	22 6 36 0	22 32	36 39	22 58	37 20	23 24	38 0	24 2	38 40	24 20	39 20	24 4	40 0	24 59	59 58 58	
58	35 18	22 7 35 58	22 33	36 38	22 59	37 18	23 25	37 58	24 3	38 39	24 21	39 19	24 4	40 0	24 59	60 59 59	

(w.)		The Correction of the Moon's Altitude, and the Aux. Angle A. (48° and 49°)																								
App. Alt.	Minutes of Moon's Hor. Parallax.																								Seconds of H. P.	
	54'		55'		56'		57'		58'		59'		60'		61'										A	
	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°		
48°																										
0'	35 16	22	8 35 56	22	33 36 37	22	59 37 17	23	25 37 57	23	51 38 37	24	17 39 17	24	43 39 57	25	9									1 1 0
2	35 15	22	8 35 55	22	34 36 35	23	0 37 15	23	26 37 56	23	52 38 36	24	18 39 16	24	44 39 56	25	10									2 1 1
4	35 13	22	8 35 54	22	35 36 34	23	1 37 14	23	27 37 54	23	53 38 34	24	19 39 14	24	45 39 54	25	11									3 2 1
6	35 12	22	10 35 52	22	36 36 32	23	2 37 12	23	28 37 53	23	54 38 33	24	19 39 13	24	45 39 53	25	11									4 3 2
8	35 11	22	10 35 51	22	36 36 31	23	2 37 11	23	28 37 51	23	54 38 31	24	20 39 11	24	46 39 51	25	12									5 3 2
10	35 9	22	11 35 49	22	37 36 30	23	3 37 10	23	29 37 50	23	55 38 30	24	21 39 10	24	47 39 50	25	13									6 4 3
12	35 8	22	12 35 48	22	38 36 28	23	4 37 8	23	30 37 48	23	56 38 28	24	22 39 8	24	48 39 48	25	14									7 5 3
14	35 7	22	13 35 47	22	39 36 27	23	5 37 7	23	31 37 47	23	57 38 27	24	23 39 7	24	49 39 47	25	15									8 5 4
16	35 5	22	13 35 45	22	39 36 25	23	5 37 5	23	31 37 45	23	57 38 25	24	23 39 5	24	50 39 45	25	16									9 6 4
18	35 4	22	14 35 44	22	40 36 24	23	6 37 4	23	32 37 44	23	58 38 24	24	24 39 4	24	50 39 44	25	16									10 7 4
20	35 3	22	15 35 43	22	41 36 22	23	7 37 3	23	33 37 42	23	59 38 22	24	25 39 3	24	51 39 42	25	17									11 7 5
22	35 1	22	15 35 41	22	42 36 21	23	8 37 1	23	34 37 41	24	0 38 21	24	26 39 0	24	52 39 40	25	18									12 8 5
24	35 0	22	16 35 40	22	42 36 20	23	8 37 0	23	34 37 39	24	0 38 19	24	27 38 59	24	53 39 39	25	19									13 9 6
26	34 59	22	17 35 38	22	43 36 18	23	9 36 58	23	35 37 38	24	1 38 18	24	27 38 58	24	54 39 37	25	20									14 9 6
28	34 57	22	17 35 37	22	44 36 17	23	10 36 57	23	36 37 36	24	2 38 16	24	28 38 56	24	54 39 36	25	20									15 10 7
30	34 56	22	18 35 36	22	44 36 15	23	10 36 55	23	37 37 35	24	3 38 15	24	29 38 55	24	55 39 34	25	21									16 11 7
32	34 55	22	19 35 34	22	45 36 14	23	11 36 54	23	37 37 34	24	3 38 13	24	30 38 53	24	56 39 33	25	22									17 11 8
34	34 53	22	20 35 33	22	46 36 13	23	12 36 52	23	38 37 32	24	4 38 12	24	30 38 52	24	57 39 31	25	23									18 12 8
36	34 52	22	20 35 32	22	46 36 11	23	13 36 51	23	39 37 31	24	5 38 10	24	31 38 50	24	57 39 30	25	24									19 13 8
38	34 51	22	21 35 30	22	47 36 10	23	13 36 50	23	40 37 29	24	6 38 9	24	32 38 49	24	58 39 28	25	24									20 13 9
40	34 49	22	22 35 29	22	48 36 8	23	14 36 48	23	40 37 28	24	6 38 7	24	33 38 47	24	59 39 27	25	25									21 14 9
42	34 48	22	22 35 27	22	49 36 7	23	15 36 47	23	41 37 26	24	7 38 6	24	33 38 46	25	0 39 25	25	26									22 14 10
44	34 46	22	23 35 26	22	49 36 6	23	16 36 45	23	42 37 25	24	8 38 4	24	34 38 44	25	0 39 23	25	27									23 15 10
46	34 45	22	24 35 25	22	50 36 4	23	16 36 44	23	43 37 23	24	9 38 3	24	35 38 43	25	1 39 21	25	27									24 16 11
48	34 44	22	25 35 23	22	51 36 3	23	17 36 42	23	43 37 22	24	10 38 2	24	36 38 41	25	2 39 20	25	28									25 16 11
50	34 42	22	25 35 22	22	51 36 1	23	18 36 41	23	44 37 21	24	10 38 0	24	37 38 40	25	3 39 19	25	29									26 17 11
52	34 41	22	26 35 21	22	52 36 0	23	19 36 40	23	45 37 19	24	11 37 59	24	37 38 38	25	4 39 17	25	30									27 18 12
54	34 40	22	27 35 19	22	53 35 59	23	19 36 38	23	46 37 18	24	12 37 57	24	38 38 37	25	4 39 16	25	31									28 18 12
56	34 38	22	27 35 18	22	54 35 57	23	20 36 37	23	46 37 16	24	13 37 56	24	39 38 35	25	5 39 14	25	32									29 19 13
58	34 37	22	28 35 16	22	55 35 56	23	21 36 35	23	47 37 15	24	13 37 54	24	40 38 34	25	6 39 13	25	33									30 20 13
49°																										
0'	34 36	22	29 35 15	22	55 35 54	23	21 36 34	23	48 37 13	24	14 37 53	24	40 38 32	25	7 39 11	25	33									31 21 14
2	34 34	22	29 35 14	22	56 35 53	23	22 36 32	23	49 37 12	24	15 37 51	24	41 38 31	25	8 39 10	25	34									32 22 15
4	34 33	22	30 35 12	22	57 35 52	23	23 36 31	23	50 37 10	24	16 37 50	24	42 38 29	25	8 39 9	25	35									33 23 15
6	34 32	22	31 35 11	22	57 35 50	23	24 36 30	23	51 37 9	24	16 37 48	24	43 38 27	25	9 39 7	25	36									34 24 16
8	34 31	22	32 35 9	22	58 35 49	23	25 36 29	23	51 37 7	24	17 37 47	24	44 38 26	25	10 39 5	25	37									35 25 16
10	34 29	22	32 35 8	22	59 35 47	23	26 36 27	23	51 37 6	24	18 37 45	24	45 38 24	25	11 39 4	25	38									36 26 17
12	34 27	22	33 35 7	22	59 35 46	23	26 36 25	23	52 37 4	24	19 37 44	24	46 38 23	25	11 39 2	25	39									37 27 18
14	34 26	22	34 35 5	22	60 35 44	23	27 36 24	23	53 37 3	24	19 37 42	24	46 38 21	25	12 39 0	25	40									38 28 19
16	34 25	22	34 35 4	22	61 35 43	23	28 36 22	23	54 37 1	24	20 37 41	24	46 38 20	25	13 38 59	25	41									39 29 20
18	34 23	22	35 35 2	22	62 35 42	23	29 36 21	23	54 37 0	24	21 37 39	24	47 38 18	25	14 38 57	25	42									40 30 21
20	34 22	22	36 35 1	22	63 35 40	23	30 36 19	23	55 36 58	24	22 37 37	24	48 38 17	25	15 38 56	25	43									41 31 22
22	34 21	22	36 35 0	22	64 35 39	23	31 36 18	23	56 36 57	24	22 37 36	24	49 38 15	25	16 38 54	25	44									42 32 23
24	34 19	22	37 35 58	23	65 35 37	23	32 36 16	23	57 36 55	24	23 37 34	24	50 38 14	25	17 38 53	25	45									43 33 24
26	34 18	22	38 35 57	23	66 35 36	23	33 36 15	23	58 36 54	24	24 37 33	24	51 38 12	25	18 38 51	25	46									44 34 25
28	34 16	22	39 35 55	23	67 35 34	23	34 36 13	23	59 36 52	24	25 37 31	24	51 38 10	25	19 38 49	25	47									45 35 26
30	34 15	22	39 35 54	23	68 35 33	23	35 36 12	23	59 36 51	24	25 37 30	24	52 38 9	25	20 38 48	25	48									46 36 27
32	34 14	22	40 35 53	23	69 35 32	23	36 36 11	23	60 36 49	24	26 37 28	24	53 38 7	25	21 38 46	25	49									47 37 28
34	34 12	22	41 35 51	23	70 35 30	23	37 36 9	23	61 36 47	24	27 37 27	24	53 38 6	25	22 38 45	25	50									48 38 29
36	34 11	22	41 35 50	23	71 35 29	23	38 36 8	23	62 36 46	24	28 37 25	24	54 38 4	25	23 38 43	25	51									49 39 30
38	34 9	22	42 35 48	23	72 35 27	23	39 36 6	23	63 36 44	24	29 37 24	24	55 38 3	25	24 38 42	25	52									50 40 31
40	34 8	22	43 35 47	23	73 35 26	23	40 36 4	23	64 36 43	24	30 37 22															

(50° and 51°) The Correction of the Moon's Altitude, and the Aux. Angle A. (w.)		Minutes of Moon's Hor. Parallax.																Seconds of H. P.		
App. Alt.		54'	55'	56'	57'	58'	59'	60'	61'											
		Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A			
50°		+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°			
0'	33 54	22 50	34 33	23 16	35 12	23 43	35 50	24 10	36 29	24 36	37 7	25	33 46	25 30	38 24	25 57	1	1	0	
2	33 53	22 50	34 32	23 17	35 10	23 44	35 49	24 11	36 27	24 37	37 6	25	33 44	25 31	38 23	25 57	2	1	1	
4	33 52	22 51	34 30	23 18	35 9	23 45	35 47	24 11	36 26	24 38	37 4	25	33 43	25 31	38 21	25 58	3	2	2	
6	33 50	22 52	34 29	23 19	35 7	23 45	35 46	24 12	36 24	24 39	37 3	25	33 41	25 32	38 20	25 59	4	3	3	
8	33 49	22 53	34 27	23 19	35 6	23 46	35 44	24 13	36 23	24 39	37 1	25	33 40	25 33	38 18	26 0	5	4	4	
10	33 47	22 53	34 26	23 20	35 4	23 47	35 43	24 13	36 21	24 40	37 0	25	33 38	25 34	38 17	26 0	6	5	5	
12	33 46	22 54	34 24	23 21	35 3	23 47	35 41	24 14	36 20	24 41	36 58	25	33 36	25 34	38 15	26 1	7	6	6	
14	33 45	22 55	34 23	23 21	35 1	23 48	35 40	24 15	36 18	24 42	36 57	25	33 35	25 35	38 13	26 2	8	7	7	
16	33 43	22 55	34 22	23 22	35 0	23 49	35 38	24 16	36 17	24 42	36 55	25	33 33	25 36	38 12	26 3	9	8	8	
18	33 42	22 56	34 20	23 23	34 58	23 49	35 37	24 16	36 15	24 43	36 53	25	33 32	25 37	38 10	26 4	10	9	9	
20	33 40	22 57	34 19	23 23	34 57	23 50	35 35	24 17	36 14	24 44	36 52	25	33 30	25 37	38 9	26 4	11	10	10	
22	33 39	22 57	34 17	23 24	34 56	23 51	35 34	24 18	36 12	24 45	36 50	25	33 29	25 38	38 7	26 5	12	11	11	
24	33 38	22 58	34 16	23 25	34 54	23 52	35 32	24 18	36 11	24 45	36 49	25	33 27	25 39	38 5	26 6	13	12	12	
26	33 36	22 59	34 14	23 25	34 53	23 52	35 31	24 19	36 9	24 46	36 47	25	33 26	25 40	38 4	26 7	14	13	13	
28	33 35	22 59	34 13	23 26	34 51	23 53	35 29	24 20	36 8	24 47	36 46	25	33 24	25 40	38 2	26 7	15	14	14	
30	33 33	23 0	34 12	23 27	34 50	23 54	35 28	24 21	36 6	24 47	36 44	25	33 23	25 41	38 1	26 8	16	15	15	
32	33 32	23 1	34 10	23 28	34 48	23 54	35 26	24 21	36 5	24 48	36 43	25	33 21	25 42	37 59	26 9	17	16	16	
34	33 31	23 1	34 9	23 28	34 47	23 55	35 25	24 22	36 3	24 49	36 41	25	33 19	25 43	37 58	26 10	18	17	17	
36	33 29	23 2	34 7	23 29	34 45	23 56	35 24	24 23	36 2	24 50	36 40	25	33 17	25 43	37 56	26 10	19	18	18	
38	33 28	23 3	34 6	23 30	34 44	23 57	35 22	24 23	36 0	24 50	36 38	25	33 16	25 44	37 54	26 11	20	19	19	
40	33 26	23 3	34 4	23 30	34 43	23 57	35 21	24 24	35 59	24 51	36 37	25	33 15	25 45	37 53	26 12	21	20	20	
42	33 25	23 4	34 3	23 31	34 41	23 58	35 19	24 25	35 57	24 52	36 35	25	33 13	25 46	37 51	26 13	22	21	21	
44	33 24	23 5	34 2	23 32	34 40	23 59	35 18	24 26	35 56	24 53	36 34	25	33 12	25 46	37 50	26 13	23	22	22	
46	33 23	23 6	34 1	23 32	34 38	23 59	35 16	24 26	35 54	24 53	36 32	25	33 10	25 47	37 48	26 14	24	23	23	
48	33 21	23 6	33 59	23 33	34 37	24 0	35 15	24 27	35 53	24 54	36 31	25	33 9	25 48	37 46	26 15	25	24	24	
50	33 19	23 7	33 57	23 34	34 35	24 1	35 13	24 28	35 51	24 55	36 29	25	33 7	25 49	37 45	26 16	26	25	25	
52	33 18	23 8	33 56	23 35	34 34	24 2	35 12	24 29	35 50	24 56	36 28	25	33 6	25 50	37 43	26 17	27	26	26	
54	33 17	23 8	33 55	23 35	34 32	24 3	35 10	24 29	35 48	24 56	36 26	25	33 4	25 50	37 42	26 17	28	27	27	
56	33 15	23 9	33 53	23 36	34 31	24 3	35 9	24 30	35 47	24 57	36 24	25	33 3	25 51	37 40	26 18	29	28	28	
58	33 14	23 10	33 52	23 37	34 29	24 4	35 7	24 31	35 45	24 58	36 23	25	33 2	25 52	37 38	26 19	30	29	29	
51°	54'	55'	56'	57'	58'	59'	60'	61'												
0'	33 12	23 10	33 50	23 37	34 28	24 4	35 6	24 31	35 44	24 58	36 21	25	33 25	25 53	37 37	26 20	31	30	30	
2	33 11	23 11	33 49	23 38	34 27	24 5	35 4	24 32	35 42	24 59	36 20	25	33 24	25 53	37 35	26 20	32	31	31	
4	33 10	23 12	33 47	23 39	34 25	24 6	35 3	24 33	35 41	25 0	36 18	25	33 23	25 54	37 34	26 21	33	32	32	
6	33 8	23 12	33 46	23 39	34 24	24 6	35 1	24 34	35 39	25 1	36 17	25	33 22	25 54	37 32	26 22	34	33	33	
8	33 7	23 13	33 44	23 40	34 22	24 7	35 0	24 34	35 37	25 1	36 15	25	33 21	25 55	37 30	26 23	35	34	34	
10	33 5	23 14	33 43	23 41	34 21	24 8	34 58	24 35	35 36	25 2	36 14	25	33 20	25 56	37 29	26 23	36	35	35	
12	33 4	23 14	33 42	23 41	34 19	24 9	34 57	24 36	35 34	25 3	36 12	25	33 19	25 57	37 27	26 24	37	36	36	
14	33 3	23 15	33 40	23 42	34 18	24 9	34 55	24 36	35 33	25 4	36 10	25	33 18	25 58	37 26	26 25	38	37	37	
16	33 1	23 16	33 39	23 43	34 16	24 10	34 54	24 37	35 31	25 5	36 9	25	33 17	25 59	37 24	26 26	39	38	38	
18	33 0	23 16	33 37	23 44	34 15	24 11	34 52	24 38	35 30	25 6	36 7	25	33 16	26 0	37 22	26 26	40	39	39	
20	32 58	23 17	33 36	23 44	34 13	24 11	34 51	24 38	35 28	25 6	36 6	25	33 15	26 0	37 21	26 27	41	40	40	
22	32 57	23 18	33 34	23 45	34 12	24 12	34 49	24 39	35 27	25 7	36 4	25	33 14	26 1	37 19	26 28	42	41	41	
24	32 55	23 18	33 33	23 46	34 10	24 13	34 48	24 40	35 25	25 7	36 3	25	33 13	26 1	37 18	26 29	43	42	42	
26	32 54	23 19	33 31	23 47	34 9	24 13	34 46	24 41	35 24	25 8	36 1	25	33 12	26 2	37 16	26 30	44	43	43	
28	32 53	23 20	33 30	23 47	34 7	24 14	34 45	24 41	35 22	25 9	36 0	25	33 11	26 3	37 14	26 30	45	44	44	
30	32 51	23 20	33 29	23 48	34 6	24 15	34 43	24 42	35 21	25 9	35 58	25	33 10	26 3	37 13	26 31	46	45	45	
32	32 50	23 21	33 27	23 48	34 4	24 15	34 42	24 43	35 19	25 10	35 56	25	33 9	26 4	37 11	26 32	47	46	46	
34	32 48	23 22	33 26	23 49	34 3	24 16	34 40	24 43	35 18	25 11	35 55	25	33 8	26 4	37 10	26 32	48	47	47	
36	32 47	23 22	33 24	23 50	34 2	24 17	34 39	24 44	35 16	25 11	35 53	25	33 7	26 5	37 8	26 33	49	48	48	
38	32 46	23 23	33 23	23 50	34 1	24 18	34 37	24 45	35 15	25 12	35 52	25	33 6	26 5	37 7	26 34	50	49	49	
40	32 44	23 24	33 21	23 51	33 59	24 18	34 36	24 45	35 13	25 13	35 50	25	33 5	26 6	37 5	26 35	51	50	50	
42	32 43	23 24	33 20	23 52	33 57	24 19	34 34	24 46	35 11	25 14	35 49	25	33 4	26 7	37 3	26 35	52	51	51	
44	32 41	23 25	33 18	23 52	33 56	24 20	34 33	24 47	35 10	25 14	35 47	25	33 3	26 8	37 1	26 36	53	52	52	
46	32 40	23 26	33 17	23 53	33 54	24 20	34 31	24 48	35 8	25 15	35 46	25	33 2	26 9	37 0	26 37	54	53	53	
48	32 38	23 26	33 16	23 54	33 53	24 21	34 30	24 48	35 7	25 16	35 44	25	33 1	26 10	36 58	26 38	55	54	54	
50	32 37	23 27	33 14	23 54	33 51	24 22	34 28	24 49	35 5	25 16	35 42	25	33 0	26 11	36 57	26 39	56	55	55	
52	32 36	23 28	33 13	23 55	33 50	24 22	34 27	24 50	35 4	25 17	35 41	25	32 59	26 12	36 55	26 40	57	56	56	
54	32 34	23 29	33 11	23 56	33 48	24 23	34 25	24 50	35 3	25 18	35 39	25	32 58	26 13	36 53	26 40	58	57	57	
56	32 33	23 29	33 10	23 56	33 47	24 24	34 24	24 51	35 1	25 19	35 38	25	32 57	26 14	36 52	26 41	59	58	58	
58	32 31	23 30	33 8	23 57	33 45	24 24	34 22	24 52	34 59	25 19	35 36	25	32 56	26 15	36 50	26 42	60	59	59	

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (52° and 53°)																			
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.		
	54'		55'		56'		57'		58'		59'		60'		61'		Corr.	A	A
	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°			
52	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	1	1	0
0	32 30	23 30 33	7 23	58 33	44 24	25 34	21 24	53 34	58 25	20 35	35 25	47 36	12 26	15 36	49 26	42 36	1	1	0
2	32 28	23 31 33	5 23	58 33	42 24	26 34	19 24	53 34	56 25	21 35	33 25	46 36	10 26	16 36	47 26	43 36	2	1	1
4	32 27	23 32 33	4 23	59 33	41 24	27 34	18 24	54 34	55 25	21 35	32 25	45 36	8 26	16 36	45 26	44 36	3	2	1
6	32 26	23 32 33	2 24	0 33	39 24	27 34	16 24	55 34	53 25	22 35	30 25	50 36	7 26	17 36	44 26	44 36	4	3	2
8	32 24	23 33 33	1 24	0 33	38 24	28 34	15 24	55 34	51 25	23 35	28 25	50 36	5 26	18 36	42 26	45 36	5	3	2
10	32 23	23 34 33	0 24	1 33	36 24	29 34	13 24	56 34	50 25	23 36	27 25	51 36	4 26	18 36	40 26	46 36	6	4	3
12	32 21	23 34 32 58	24	2 33	35 24	29 34	12 24	57 34	48 25	24 35	25 25	52 36	2 26	19 36	39 26	47 36	7	4	3
14	32 20	23 35 32 57	24	2 33	33 24	30 34	10 24	57 34	47 25	25 35	24 25	52 36	0 26	20 36	37 26	47 36	8	5	4
16	32 18	23 35 32 55	24	3 33	32 24	31 34	9 24	58 34	45 25	26 35	22 25	53 36	5 26	21 36	35 26	48 36	9	6	5
18	32 17	23 36 32 54	24	4 33	30 24	31 34	7 24	59 34	44 25	26 35	20 25	54 36	5 26	21 36	34 26	49 36	10	7	6
20	32 15	23 37 32 52	24	4 33	29 24	32 34	5 24	59 34	42 25	27 35	19 25	54 36	5 26	22 36	32 26	50 36	11	8	7
22	32 14	23 37 32 51	24	5 33	27 24	33 34	3 25	0 34	41 25	28 35	17 25	55 36	5 26	23 36	31 26	50 36	12	9	8
24	32 13	23 38 32 49	24	6 33	26 24	33 34	2 25	1 34	39 25	28 35	16 25	56 36	5 26	23 36	29 26	51 36	13	10	9
26	32 11	23 39 32 48	24	6 33	24 24	34 34	1 25	1 34	38 25	29 35	14 25	57 36	5 26	24 36	27 26	52 36	14	11	10
28	32 10	23 39 32 46	24	7 33	23 24	35 34	5 25	2 34	36 25	30 35	13 25	57 36	5 26	25 36	26 26	53 36	15	12	11
30	32 8	23 40 32 45	24	8 33	21 24	35 34	5 25	3 34	34 25	30 35	11 25	58 36	5 26	26 36	24 26	54 36	16	13	12
32	32 7	23 41 32 43	24	8 33	20 24	36 34	5 25	4 34	33 25	31 35	9 25	59 36	5 26	26 36	22 26	55 36	17	14	13
34	32 5	23 41 32 42	24	9 33	18 24	37 34	5 25	4 34	31 25	32 35	8 26	0 35	44 26	27 36	21 26	55 36	18	15	14
36	32 4	23 42 32 40	24	10 33	17 24	37 34	5 25	5 34	30 25	33 35	6 26	0 35	43 26	28 36	19 26	56 36	19	16	15
38	32 3	23 43 32 39	24	10 33	15 24	38 34	5 25	6 34	28 25	33 35	5 26	1 35	41 26	29 36	18 26	56 36	20	17	16
40	32 1	23 43 32 37	24	11 33	14 24	39 34	5 25	6 34	27 25	34 35	3 26	2 35	39 26	29 36	16 26	57 36	21	18	17
42	32 0	23 44 32 36	24	12 33	12 24	39 34	5 25	7 34	25 25	35 35	2 26	2 35	38 26	30 36	14 26	58 36	22	19	18
44	31 58	23 45 32 35	24	12 33	11 24	40 34	5 25	8 34	24 25	35 35	0 26	3 35	36 26	31 36	13 26	58 36	23	20	19
46	31 57	23 45 32 33	24	13 33	9 24	41 34	5 25	8 34	22 25	36 34	5 26	4 35	35 26	31 36	11 26	59 36	24	21	20
48	31 55	23 46 32 32	24	14 33	8 24	41 34	5 25	9 34	20 25	37 34	5 26	4 35	33 26	32 36	9 27	0 36	25	22	21
50	31 54	23 47 32 30	24	14 33	6 24	42 34	5 25	10 34	19 25	37 34	5 26	5 35	31 26	33 36	8 27	1 36	26	23	22
52	31 52	23 47 32 29	24	15 33	5 24	43 34	5 25	10 34	17 25	38 34	5 26	6 35	30 26	34 36	6 27	1 36	27	24	23
54	31 51	23 48 32 27	24	16 33	3 24	43 34	5 25	11 34	16 25	39 34	5 26	7 35	28 26	34 36	4 27	2 36	28	25	24
56	31 50	23 49 32 26	24	16 33	2 24	44 34	5 25	12 34	14 25	40 34	5 26	7 35	27 26	35 36	3 27	3 36	29	26	25
58	31 48	23 49 32 24	24	17 33	0 24	45 34	5 25	13 34	13 25	40 34	5 26	8 35	25 26	36 36	1 27	4 36	30	27	26
53	54'	55'	56'	57'	58'	59'	60'	61'	Corr.	A	A	Corr.	A	A	Corr.	A	1	1	0
0	31 47	23 50 32 23	24 18	32 59	24 45	33 35	25 13	34 11	25 41	34 47	26 9	35 23	26 36	35 59	27 4	41 25	19	19	18
2	31 45	23 51 32 21	24 18	32 57	24 46	33 33	25 14	34 10	25 42	34 46	26 9	35 22	26 37	35 58	27 5	42 25	20	20	19
4	31 44	23 51 32 20	24 19	32 56	24 47	33 32	25 15	34 8	25 42	34 44	26 10	35 20	26 38	35 56	27 6	43 25	21	21	20
6	31 42	23 52 32 18	24 20	32 54	24 47	33 30	25 15	34 6	25 43	34 42	26 11	35 18	26 39	35 55	27 6	44 25	22	22	21
8	31 41	23 52 32 17	24 20	32 53	24 48	33 29	25 16	34 5	25 44	34 41	26 11	35 17	26 39	35 53	27 7	45 25	23	23	22
10	31 39	23 53 32 15	24 21	32 51	24 49	33 27	25 17	34 3	25 44	34 39	26 12	35 15	26 40	35 51	27 8	46 25	24	24	23
12	31 38	23 54 32 14	24 22	32 50	24 49	33 26	25 17	34 2	25 45	34 38	26 13	35 14	26 41	35 50	27 9	47 25	25	25	24
14	31 36	23 54 32 12	24 22	32 48	24 50	33 24	25 18	34 0	25 46	34 36	26 14	35 12	26 41	35 48	27 9	48 25	26	26	25
16	31 35	23 55 32 11	24 23	32 47	24 51	33 23	25 19	33 59	25 46	34 34	26 14	35 10	26 42	35 46	27 10	49 25	27	27	26
18	31 34	23 56 32 9	24 24	32 45	24 51	33 21	25 19	33 57	25 47	34 33	26 15	35 9	26 43	35 45	27 11	50 25	28	28	27
20	31 32	23 56 32 8	24 24	32 44	24 52	33 20	25 20	33 55	25 48	34 31	26 16	35 7	26 44	35 43	27 11	51 25	29	29	28
22	31 31	23 57 32 6	24 25	32 42	24 53	33 18	25 21	33 54	25 48	34 30	26 16	35 5	26 44	35 41	27 12	52 25	30	30	29
24	31 29	23 58 32 5	24 25	32 41	24 53	33 16	25 21	33 52	25 49	34 28	26 17	35 4	26 45	35 40	27 13	53 25	31	31	30
26	31 28	23 58 32 3	24 26	32 39	24 54	33 15	25 22	33 51	25 50	34 26	26 18	35 2	26 46	35 38	27 14	54 25	32	32	31
28	31 26	23 59 32 2	24 27	32 38	24 55	33 13	25 23	33 49	25 51	34 25	26 18	35 1	26 46	35 36	27 14	55 25	33	33	32
30	31 25	23 59 32 0	24 27	32 36	24 55	33 12	25 23	33 47	25 51	34 23	26 19	34 59	26 47	35 35	27 15	56 25	34	34	33
32	31 23	24 0 31 59	24 28	32 35	24 56	33 10	25 24	33 46	25 52	34 22	26 20	34 57	26 48	35 33	27 16	57 25	35	35	34
34	31 22	24 1 31 57	24 29	32 33	24 57	33 9	25 25	33 44	25 53	34 20	26 21	34 56	26 48	35 31	27 16	58 25	36	36	35
36	31 20	24 1 31 56	24 30	32 32	24 57	33 7	25 25	33 43	25 53	34 18	26 21	34 54	26 49	35 30	27 17	59 25	37	37	36
38	31 19	24 2 31 54	24 30	32 30	24 58	33 6	25 26	33 41	25 54	34 17	26 22	34 52	26 50	35 28	27 18	60 25	38	38	37
40	31 17	24 3 31 53	24 31	32 28	24 59	33 4	25 27	33 40	25 55	34 15	26 23	34 51	26 51	35 26	27 19	61 25	39	39	38
42	31 16	24 3 31 51	24 31	32 27	24 59	33 3	25 27	33 38	25 55	34 14	26 23	34 49	26 51	35 25	27 19	62 25	40	40	39
44	31 14	24 4 31 50	24 32	32 25	25 0	33 2	25 28	33 36	25 56	34 12	26 24	34 47	26 52	35 23	27 20	63 25	41	41	40
46	31 13	24 5 31 48	24 33	32 24	25 1	33 2	25 29	33 35	25 57	34 10	26 25	34 46	26 53	35 21	27 21	64 25	42	42	41
48	31 12	24 5 31 47	24 33	32 22	25 1	33 2	25 29	33 33	25 57	34 9	26 25	34 44	26 53	35 20	27 21	65 25	43	43	42
50	31 10	24 6 31 45	24 34	32 21	25 2	33 2	25 30	33 32	25 58	34 7	26 26	34 43	26 54	35 18	27 22	66 25	44	44	43
52	31 9	24 6 31 44	24 35	32 19	25 3	33 2	25 31	33 30	25 59	34 6	26 27	34 41	26 55	35 16	27 23	67 25	45	45	44
54	31 7	24 7 31 43	24 35</																

(54° and 55°) The Correction of the Moon's Altitude, and the Aux. Angle A.																	(w.)		
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.		
	54'		55'		56'		57'		58'		59'		60'		61'		"	"	
54°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	"	"	
0'	31	324	9	31	38	24	37	32	13	25	5	32	49	25	33	33	24	1	0
2	31	1	24	10	31	37	24	38	32	12	25	6	32	47	25	34	2	1	
4	31	0	24	10	31	35	24	38	32	10	25	7	32	45	25	35	4	2	
6	30	58	24	11	31	34	24	39	32	9	25	7	32	44	25	35	6	3	
8	30	57	24	12	31	32	24	40	32	7	25	8	32	42	25	36	8	3	
10	30	55	24	12	31	30	24	40	32	6	25	8	32	41	25	37	10	4	
12	30	54	24	13	31	29	24	41	32	4	25	9	32	39	25	37	12	5	
14	30	52	24	13	31	27	24	42	32	3	25	10	32	38	25	38	14	6	
16	30	51	24	14	31	26	24	42	32	1	25	10	32	36	25	39	16	7	
18	30	49	24	15	31	24	24	43	31	59	25	11	32	34	25	39	18	8	
20	30	48	24	15	31	23	24	43	31	58	25	12	32	33	25	40	20	9	
22	30	46	24	16	31	21	24	44	31	56	25	12	32	31	25	41	22	10	
24	30	45	24	17	31	20	24	45	31	55	25	13	32	30	25	41	24	11	
26	30	43	24	17	31	18	24	45	31	53	25	14	32	28	25	42	26	12	
28	30	42	24	18	31	17	24	46	31	52	25	14	32	27	25	42	28	13	
30	30	40	24	18	31	15	24	47	31	50	25	15	32	25	25	43	30	14	
32	30	39	24	19	31	14	24	47	31	49	25	16	32	23	25	44	32	15	
34	30	37	24	20	31	12	24	48	31	47	25	16	32	22	25	44	34	16	
36	30	36	24	20	31	11	24	48	31	45	25	17	32	20	25	45	36	17	
38	30	34	24	21	31	9	24	49	31	44	25	17	32	19	25	46	38	18	
40	30	33	24	21	31	8	24	50	31	42	25	18	32	17	25	46	40	19	
42	30	32	24	22	31	6	24	50	31	41	25	19	32	16	25	47	42	20	
44	30	30	24	23	31	5	24	51	31	39	25	19	32	14	25	48	44	21	
46	30	29	24	23	31	3	24	52	31	38	25	20	32	12	25	48	46	22	
48	30	27	24	24	31	2	24	52	31	36	25	21	32	11	25	49	48	23	
50	30	26	24	24	31	0	24	53	31	35	25	21	32	9	25	50	50	24	
52	30	24	24	25	30	59	24	54	31	33	25	22	32	8	25	50	52	25	
54	30	23	24	26	30	57	24	54	31	32	25	23	32	6	25	51	54	26	
56	30	21	24	26	30	56	24	55	31	30	25	23	32	5	25	52	56	27	
58	30	20	24	27	30	54	24	55	31	29	25	24	32	3	25	52	58	28	
55°	54'		55'		56'		57'		58'		59'		60'		61'				
0'	30	18	24	28	30	52	24	56	31	27	25	24	32	1	25	53	32	36	
2	30	17	24	28	30	51	24	57	31	25	25	25	32	0	25	54	32	34	
4	30	15	24	29	30	49	24	57	31	24	25	26	31	58	25	54	32	33	
6	30	14	24	29	30	48	24	58	31	22	25	26	31	57	25	55	32	31	
8	30	12	24	30	30	46	24	59	31	21	25	27	31	55	25	56	32	29	
10	30	11	24	31	30	45	24	59	31	19	25	28	31	53	25	56	32	28	
12	30	9	24	31	30	43	25	0	31	18	25	28	31	52	25	57	32	26	
14	30	8	24	32	30	42	25	0	31	16	25	29	31	50	25	57	32	24	
16	30	6	24	32	30	40	25	1	31	15	25	30	31	49	25	58	32	23	
18	30	5	24	33	30	39	25	2	31	13	25	30	31	47	25	59	32	21	
20	30	3	24	34	30	37	25	2	31	11	25	31	31	45	25	59	32	20	
22	30	2	24	34	30	36	25	3	31	10	25	31	31	44	26	0	32	18	
24	30	0	24	35	30	34	25	4	31	8	25	32	31	42	26	1	32	16	
26	29	59	24	35	30	33	25	4	31	7	25	33	31	41	26	1	32	15	
28	29	57	24	36	30	31	25	5	31	5	25	33	31	39	26	2	32	13	
30	29	56	24	37	30	30	25	5	31	4	25	34	31	38	26	3	32	11	
32	29	54	24	37	30	28	25	6	31	2	25	35	31	36	26	3	32	10	
34	29	53	24	38	30	26	25	7	31	0	25	35	31	34	26	4	32	8	
36	29	51	24	38	30	25	25	7	30	59	25	36	31	33	26	5	32	7	
38	29	50	24	39	30	23	25	8	30	57	25	36	31	31	26	5	32	5	
40	29	48	24	40	30	22	25	8	30	56	25	37	31	30	26	6	32	4	
42	29	46	24	40	30	20	25	9	30	54	25	38	31	28	26	6	32	3	
44	29	45	24	41	30	19	25	10	30	53	25	38	31	26	26	7	32	2	
46	29	43	24	42	30	17	25	10	30	51	25	39	31	25	26	8	31	59	
48	29	42	24	42	30	16	25	11	30	49	25	40	31	23	26	8	31	57	
50	29	40	24	43	30	14	25	11	30	48	25	40	31	22	26	9	31	55	
52	29	39	24	43	30	13	25	12	30	46	25	41	31	20	26	10	31	54	
54	29	37	24	44	30	11	25	13	30	45	25	42	31	18	26	10	31	52	
56	29	36	24	45	30	10	25	13	30	43	25	42	31	17	26	11	31	50	
58	29	34	24	45	30	8	25	14	30	42	25	43	31	15	26	12	31	49	

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (56° and 57°)																			
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.		
	54'		55'		56'		57'		58'		59'		60'		61'		"	∠	A
56°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	1	2	3
0'	29 33	24 46	30 7	25 15	30 40	25 43	31 14	26 12	31 47	26 41	32 21	27 10	32 54	27 38	33 28	28 7	1	1	0
2	29 31	24 46	30 5	25 15	30 39	25 44	31 12	26 13	31 46	26 42	32 19	27 10	32 53	27 39	33 26	28 8	2	1	1
4	29 30	24 47	30 3	25 16	30 37	25 45	31 10	26 13	31 44	26 42	32 17	27 11	32 51	27 40	33 24	28 9	3	2	2
6	29 28	24 48	30 2	25 16	30 35	25 45	31 9	26 14	31 42	26 43	32 16	27 12	32 49	27 40	33 23	28 9	4	3	3
8	29 27	24 48	30 0	25 17	30 34	25 46	31 7	26 15	31 41	26 43	32 14	27 12	32 48	27 41	33 21	28 10	5	4	4
10	29 25	24 49	29 59	25 18	30 32	25 46	31 6	26 15	31 39	26 44	32 12	27 13	32 46	27 42	33 19	28 11	6	5	5
12	29 24	24 49	29 57	25 18	30 31	25 47	31 4	26 16	31 37	26 45	32 11	27 14	32 44	27 42	33 18	28 11	7	6	6
14	29 22	24 50	29 56	25 19	30 29	25 48	31 2	26 17	31 36	26 45	32 9	27 14	32 42	27 43	33 16	28 12	8	7	7
16	29 21	24 51	29 54	25 19	30 27	25 48	31 1	26 17	31 34	26 46	32 7	27 15	32 41	27 44	33 14	28 13	9	8	8
18	29 19	24 51	29 53	25 20	30 26	25 49	30 59	26 18	31 33	26 47	32 6	27 16	32 39	27 44	33 12	28 13	10	9	9
20	29 18	24 52	29 51	25 21	30 24	25 49	30 58	26 18	31 31	26 47	32 4	27 16	32 37	27 45	33 11	28 14	11	10	10
22	29 16	24 52	29 50	25 21	30 23	25 50	30 56	26 19	31 29	26 48	32 2	27 17	32 36	27 46	33 9	28 15	12	11	11
24	29 15	24 53	29 48	25 22	30 21	25 51	30 54	26 20	31 28	26 49	32 0	27 17	32 34	27 46	33 7	28 15	13	12	12
26	29 13	24 53	29 46	25 22	30 20	25 51	30 53	26 20	31 26	26 49	31 59	27 18	32 32	27 47	33 6	28 16	14	13	13
28	29 12	24 54	29 45	25 23	30 18	25 52	30 51	26 21	31 24	26 50	31 57	27 19	32 31	27 48	33 4	28 17	15	14	14
30	29 10	24 55	29 43	25 24	30 16	25 53	30 50	26 22	31 23	26 50	31 56	27 19	32 29	27 48	33 2	28 18	16	15	15
32	29 9	24 55	29 42	25 24	30 15	25 53	30 48	26 22	31 21	26 51	31 54	27 20	32 27	27 49	33 0	28 18	17	16	16
34	29 7	24 56	29 40	25 25	30 13	25 54	30 46	26 23	31 19	26 52	31 52	27 21	32 25	27 50	32 59	28 19	18	17	17
36	29 6	24 56	29 39	25 25	30 12	25 54	30 45	26 23	31 18	26 52	31 51	27 21	32 24	27 50	32 57	28 19	19	18	18
38	29 4	24 57	29 37	25 26	30 10	25 55	30 43	26 24	31 16	26 53	31 49	27 22	32 22	27 51	32 55	28 20	20	19	19
40	29 2	24 58	29 35	25 27	30 8	25 56	30 41	26 25	31 14	26 54	31 47	27 23	32 20	27 52	32 53	28 21	21	20	20
42	29 1	24 58	29 34	25 27	30 7	25 56	30 40	26 25	31 13	26 54	31 46	27 23	32 19	27 52	32 52	28 21	22	21	21
44	28 59	24 59	29 32	25 28	30 5	25 57	30 38	26 26	31 11	26 55	31 44	27 24	32 17	27 53	32 50	28 22	23	22	22
46	28 58	24 59	29 31	25 28	30 4	25 58	30 37	26 27	31 10	26 56	31 42	27 25	32 16	27 54	32 48	28 23	24	23	23
48	28 56	25 0	29 29	25 29	30 2	25 58	30 35	26 27	31 8	26 56	31 41	27 25	32 14	27 54	32 47	28 23	25	24	24
50	28 55	25 1	29 28	25 30	30 1	25 59	30 33	26 28	31 6	26 57	31 39	27 26	32 12	27 55	32 45	28 24	26	25	25
52	28 53	25 1	29 26	25 30	29 59	25 59	30 32	26 28	31 5	26 57	31 37	27 27	32 10	27 56	32 43	28 25	27	26	26
54	28 52	25 2	29 25	25 31	29 57	26 0	30 30	26 29	31 3	26 58	31 36	27 27	32 9	27 56	32 41	28 25	28	27	27
56	28 50	25 2	29 23	25 31	29 56	26 1	30 29	26 30	31 1	26 59	31 34	27 28	32 7	27 57	32 40	28 26	29	28	28
58	28 49	25 3	29 22	25 32	29 54	26 1	30 27	26 30	31 0	26 59	31 32	27 28	32 5	27 58	32 38	28 27	30	29	29
57°	54'	55'	56'	57'	58'	59'	60'	61'	54'	55'	56'	57'	58'	59'	60'	61'	40	41	42
0'	26 47	25 4	29 20	25 33	29 53	26 2	30 25	26 31	30 58	27 0	31 31	27 29	32 3	27 58	32 36	28 27	43	44	45
2	26 46	25 4	29 18	25 33	29 51	26 2	30 24	26 32	30 56	27 1	31 29	27 30	32 2	27 59	32 34	28 28	44	45	46
4	26 44	25 5	29 17	25 34	29 49	26 3	30 22	26 32	30 55	27 1	31 27	27 30	32 0	27 59	32 33	28 29	45	46	47
6	26 43	25 5	29 15	25 34	29 48	26 4	30 21	26 33	30 53	27 2	31 26	27 31	31 58	28 0	32 31	28 29	46	47	48
8	26 41	25 6	29 14	25 35	29 46	26 4	30 19	26 33	30 51	27 2	31 24	27 32	31 57	28 1	32 29	28 30	47	48	49
10	26 40	25 6	29 12	25 36	29 45	26 5	30 17	26 34	30 50	27 3	31 22	27 32	31 55	28 1	32 27	28 31	48	49	50
12	26 38	25 7	29 11	25 36	29 43	26 5	30 16	26 35	30 48	27 4	31 21	27 33	31 53	28 2	32 26	28 31	49	50	51
14	26 37	25 8	29 9	25 37	29 41	26 6	30 14	26 35	30 46	27 4	31 19	27 34	31 51	28 2	32 24	28 32	50	51	52
16	26 35	25 8	29 7	25 37	29 40	26 7	30 12	26 36	30 45	27 5	31 17	27 34	31 50	28 3	32 22	28 33	51	52	53
18	26 33	25 9	29 6	25 38	29 38	26 7	30 11	26 36	30 43	27 6	31 16	27 35	31 48	28 3	32 20	28 33	52	53	54
20	26 32	25 9	29 4	25 38	29 37	26 8	30 9	26 37	30 41	27 6	31 14	27 35	31 46	28 4	32 19	28 34	53	54	55
22	26 30	25 10	29 3	25 39	29 35	26 8	30 7	26 38	30 40	27 7	31 12	27 36	31 45	28 4	32 17	28 35	54	55	56
24	26 29	25 10	29 1	25 40	29 33	26 9	30 6	26 38	30 38	27 7	31 10	27 37	31 43	28 5	32 15	28 35	55	56	57
26	26 27	25 11	28 59	25 40	29 32	26 10	30 4	26 39	30 36	27 8	31 9	27 37	31 41	28 5	32 13	28 36	56	57	58
28	26 26	25 12	28 58	25 41	29 30	26 10	30 3	26 39	30 35	27 9	31 7	27 38	31 39	28 6	32 12	28 36	57	58	59
30	26 24	25 12	28 56	25 41	29 29	26 11	30 1	26 40	30 33	27 9	31 5	27 38	31 38	28 6	32 10	28 37	58	59	60
32	26 23	25 13	28 55	25 42	29 27	26 11	29 59	26 41	30 31	27 10	31 4	27 39	31 36	28 7	32 8	28 38	59	60	61
34	26 21	25 13	28 53	25 43	29 25	26 12	29 58	26 41	30 30	27 10	31 2	27 40	31 34	28 7	32 6	28 38	60	61	62
36	26 19	25 14	28 52	25 43	29 24	26 13	29 56	26 42	30 28	27 11	31 0	27 40	31 32	28 10	32 5	28 39	61	62	63
38	26 18	25 15	28 50	25 44	29 22	26 13	29 54	26 42	30 26	27 12	30 59	27 41	31 31	28 10	32 4	28 40	62	63	64
40	26 16	25 15	28 48	25 44	29 21	26 14	29 53	26 43	30 25	27 12	30 57	27 42	31 29	28 11	32 1	28 40	63	64	65
42	26 15	25 16	28 47	25 45	29 19	26 14	29 51	26 44	30 23	27 13	30 55	27 42	31 27	28 12	31 59	28 41	64	65	66
44	26 13	25 16	28 45	25 46	29 17	26 15	29 49	26 44	30 21	27 14	30 54	27 43	31 26	28 12	31 58	28 42	65	66	67
46	26 12	25 17	28 44	25 46	29 16	26 15	29 48	26 45	30 20	27 14	30 52	27 43	31 24	28 13	31 56	28 42	66	67	68
48	26 10	25 17	28 42	25 47	29 14	26 16	29 46	26 45	30 18	27 15	30 50	27 44	31 22	28 13	31 54	28 43	67	68	69
50	26 9	25 18	28 41	25 47	29 13	26 17	29 45	26 46	30 16	27 15	30 48	27 45	31 20	28 14	31 52	28 44	68	69	70
52	26 7	25 19	28 39	25 48	29 11	26 17	29 43	26 47	30 15	27 16	30 47	27 45	31 19	28 15	31 51	28 44	69	70	71
54	26 5	25 19	28 38	25 48	29 9	26 18	29 41	26 47	30 13	27 17	30 45	27 46	31 17	28 15	31 49	28 45	70	71	72
56	26 4	25 20	28 36	25 49	29 8	26 18	29 40	26 48	30 12	27 17	30 43	27 47	31 15	28 16	31 47	28 45	71	72	73
58	26 3	25 20	28 34	25 50	29 6	26 19	29 38	26 48	30 10	27 18	30 42	27 47	31 14						

(58° and 59°)		The Correction of the Moon's Altitude, and the Aux. Angle A.																(w.)	
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.		
	54'		55'		56'		57'		58'		59'		60'		61'		"	"	
58°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	"	"	
0'	28 1 25 21	28 33 25 50	29 5 26 20	29 36 26 49	30 8 27 18	30 40 27 48	31 12 28 17	31 44 28 47	32 1 28 17	32 49 31 10	33 18 31 42	34 47 32 19	35 16 32 49	35 45 33 19	36 14 33 49	36 43 34 19	1	1	
2	27 59 25 21	28 31 25 51	29 3 26 20	29 35 26 50	30 7 27 19	30 38 27 49	31 10 28 18	31 42 28 47	32 1 28 17	32 49 31 10	33 18 31 42	34 47 32 19	35 16 32 49	35 45 33 19	36 14 33 49	36 43 34 19	2	2	
4	27 58 25 22	28 30 25 51	29 1 26 21	29 33 26 50	30 5 27 20	30 37 27 49	31 8 28 19	31 40 28 48	32 0 27 20	30 31 27 51	31 3 28 20	31 35 28 50	32 0 27 20	30 31 27 51	31 3 28 20	31 35 28 50	3	3	
6	27 56 25 22	28 28 25 52	29 0 26 21	29 31 26 51	30 3 27 20	30 35 27 50	31 7 28 19	31 38 28 49	32 0 27 20	30 31 27 51	31 3 28 20	31 35 28 50	32 0 27 20	30 31 27 51	31 3 28 20	31 35 28 50	4	4	
8	27 55 25 23	28 26 25 52	28 58 26 22	29 30 26 51	30 1 27 21	30 33 27 50	31 5 28 20	31 37 28 49	32 0 27 21	30 31 27 51	31 3 28 20	31 35 28 50	32 0 27 21	30 31 27 51	31 3 28 20	31 35 28 50	5	5	
10	27 53 25 24	28 25 25 53	28 56 26 23	29 28 26 52	30 0 27 21	30 31 27 51	31 3 28 20	31 35 28 50	32 0 27 21	30 31 27 51	31 3 28 20	31 35 28 50	32 0 27 21	30 31 27 51	31 3 28 20	31 35 28 50	6	6	
12	27 52 25 24	28 23 25 54	28 55 26 23	29 26 26 53	29 58 27 22	30 30 27 52	31 1 28 21	31 33 28 51	32 0 27 22	30 30 27 52	31 1 28 21	31 33 28 51	32 0 27 22	30 30 27 52	31 1 28 21	31 33 28 51	7	7	
14	27 50 25 25	28 22 25 54	28 53 26 24	29 25 26 53	29 56 27 23	30 28 27 52	31 0 28 22	31 31 28 51	32 0 27 23	30 28 27 53	31 0 28 22	31 31 28 51	32 0 27 23	30 28 27 53	31 0 28 22	31 31 28 51	8	8	
16	27 49 25 25	28 20 25 55	28 52 26 24	29 23 26 54	29 55 27 23	30 26 27 53	30 58 28 22	31 30 28 52	32 0 27 24	30 26 27 53	31 0 28 22	31 30 28 52	32 0 27 24	30 26 27 53	31 0 28 22	31 30 28 52	9	9	
18	27 47 25 26	28 18 25 55	28 50 26 25	29 22 26 54	29 53 27 24	30 25 27 53	30 56 28 23	31 28 28 52	32 0 27 25	30 25 27 53	31 0 28 22	31 28 28 52	32 0 27 25	30 25 27 53	31 0 28 22	31 28 28 52	10	10	
20	27 45 25 26	28 17 25 56	28 48 26 25	29 20 26 55	29 51 27 24	30 23 27 54	30 54 28 24	31 26 28 53	32 0 27 26	30 23 27 54	31 0 28 23	31 26 28 53	32 0 27 26	30 23 27 54	31 0 28 23	31 26 28 53	11	11	
22	27 44 25 27	28 15 25 56	28 47 26 26	29 18 26 56	29 50 27 25	30 21 27 55	30 53 28 24	31 24 28 54	32 0 27 27	30 21 27 55	31 0 28 24	31 24 28 54	32 0 27 27	30 21 27 55	31 0 28 24	31 24 28 54	12	12	
24	27 42 25 28	28 14 25 57	28 45 26 27	29 17 26 56	29 48 27 26	30 19 27 55	30 51 28 25	31 22 28 54	32 0 27 28	30 19 27 55	31 0 28 25	31 22 28 54	32 0 27 28	30 19 27 55	31 0 28 25	31 22 28 54	13	13	
26	27 41 25 28	28 12 25 58	28 44 26 27	29 15 26 57	29 46 27 26	30 18 27 56	30 49 28 25	31 21 28 55	32 0 27 29	30 18 27 56	31 0 28 26	31 21 28 55	32 0 27 29	30 18 27 56	31 0 28 26	31 21 28 55	14	14	
28	27 39 25 29	28 11 25 58	28 42 26 28	29 13 26 57	29 45 27 27	30 16 27 56	30 47 28 26	31 19 28 56	32 0 27 30	30 16 27 56	31 0 28 27	31 19 28 56	32 0 27 30	30 16 27 56	31 0 28 27	31 19 28 56	15	15	
30	27 38 25 29	28 9 25 59	28 40 26 28	29 12 26 58	29 43 27 27	30 14 27 57	30 46 28 27	31 17 28 56	32 0 27 31	30 14 27 57	31 0 28 28	31 17 28 56	32 0 27 31	30 14 27 57	31 0 28 28	31 17 28 56	16	16	
32	27 36 25 30	28 7 25 59	28 39 26 29	29 10 26 59	29 41 27 28	30 13 27 58	30 44 28 27	31 15 28 57	32 0 27 32	30 13 27 58	31 0 28 29	31 15 28 57	32 0 27 32	30 13 27 58	31 0 28 29	31 15 28 57	17	17	
34	27 34 25 30	28 6 25 60	28 37 26 30	29 8 26 59	29 40 27 29	30 11 27 58	30 42 28 28	31 14 28 57	32 0 27 33	30 11 27 58	31 0 28 30	31 14 28 57	32 0 27 33	30 11 27 58	31 0 28 30	31 14 28 57	18	18	
36	27 33 25 31	28 4 25 60	28 35 26 30	29 7 26 59	29 38 27 29	30 9 27 59	30 40 28 29	31 12 28 58	32 0 27 34	30 9 27 59	31 0 28 31	31 12 28 58	32 0 27 34	30 9 27 59	31 0 28 31	31 12 28 58	19	19	
38	27 31 25 31	28 3 25 61	28 34 26 31	29 5 26 59	29 36 27 30	30 8 27 59	30 39 28 29	31 10 28 59	32 0 27 35	30 8 27 59	31 0 28 32	31 10 28 59	32 0 27 35	30 8 27 59	31 0 28 32	31 10 28 59	20	20	
40	27 30 25 32	28 1 25 62	28 32 26 31	29 3 26 59	29 35 27 30	30 6 28 0 30	37 28 30	31 8 28 59	32 0 27 36	30 6 28 0 30	37 28 30	31 8 28 59	32 0 27 36	30 6 28 0 30	37 28 30	31 8 28 59	21	21	
42	27 28 25 33	27 59 26	2 28 31	26 32 29	2 27	1 29 33	27 31 30	4 28 1 30 35	28 30 31	7 29 0	28 14	14	28 14	14	28 14	14	22	22	
44	27 27 25 33	27 58 26	3 28 29	26 32 29	0 27	2 29 31	27 32 30	2 28 1 30 34	28 31 31	5 29 1	28 13	13	28 13	13	28 13	13	23	23	
46	27 25 25 34	27 56 26	3 28 27	26 33 28 58	27 3 29 30	27 32 30	1 28 2 30 32	28 32 31	3 29 1	31 16 15	15	15	31 16 15	15	15	15	24	24	
48	27 24 25 34	27 55 26	4 28 26	26 34 28 57	27 3 29 28	27 33 29 59	28 3 30 28 32	31 1 29 2	32 16 16	16	16	32 16 16	16	16	16	16	25	25	
50	27 22 25 35	27 53 26	4 28 24	26 34 28 55	27 4 29 26	27 33 29 57	28 3 30 28 33	30 59 29	33 17 16	16	16	33 17 16	16	16	16	16	26	26	
52	27 20 25 35	27 51 26	5 28 22	26 35 28 53	27 4 29 25	27 34 29 56	28 4 30 28 34	30 58 29	34 17 17	17	17	34 17 17	17	17	17	17	27	27	
54	27 19 25 36	27 50 26	6 28 21	26 35 28 52	27 5 29 23	27 35 29 54	28 4 30 25 28 34	30 56 29	35 18 17	17	17	35 18 17	17	17	17	17	28	28	
56	27 17 25 36	27 48 26	6 28 19	26 36 28 50	27 6 29 21	27 35 29 52	28 5 30 23 28 35	30 54 29	36 18 18	18	18	36 18 18	18	18	18	18	29	29	
58	27 16 25 37	27 47 26	7 28 18	26 37 28 49	27 6 29 19	27 36 29 50	28 6 30 21 28 35	30 52 29	37 19 19	19	19	37 19 19	19	19	19	19	30	30	
59°	54'	55'	56'	57'	58'	59'	60'	61'	59°	54'	55'	56'	57'	58'	59'	60'	61'	39	39
0'	27 14 25 38	27 45 26	7 28 16	26 37 28 47	27 7 29 18	27 36 29 49	28 6 30 20 28 36	30 51 29	40 20 20	20	20	40 20 20	20	20	20	20	41	41	
2	27 13 25 38	27 43 26	8 28 14	26 38 28 45	27 7 29 16	27 37 29 47	28 7 30 18 28 37	30 49 29	42 21 21	21	21	42 21 21	21	21	21	21	42	42	
4	27 11 25 39	27 42 26	8 28 13	26 38 28 44	27 8 29 14	27 38 29 45	28 7 30 16 28 37	30 47 29	43 22 21	21	21	43 22 21	21	21	21	21	43	43	
6	27 9 25 39	27 40 26	9 28 11	26 39 28 42	27 9 29 13	27 38 29 44	28 8 30 14 28 38	30 45 29	44 23 22	22	22	44 23 22	22	22	22	22	44	44	
8	27 8 25 40	27 39 26	9 28 9	26 39 28 40	27 9 29 11	27 39 29 42	28 9 30 13 28 38	30 43 29	45 24 22	22	22	45 24 22	22	22	22	22	45	45	
10	27 6 25 40	27 37 26	10 28 8	26 40 28 39	27 10 29 9	27 39 29 40	28 9 30 11 28 39	30 42 29	46 25 23	23	23	46 25 23	23	23	23	23	46	46	
12	27 5 25 41	27 35 26	11 28 6	26 40 28 37	27 10 29 8	27 40 29 38	28 10 30 9 28 40	30 40 29	47 26 23	23	23	47 26 23	23	23	23	23	47	47	
14	27 3 25 41	27 34 26	11 28 5	26 41 28 35	27 11 29 6	27 41 29 37	28 10 30 7 28 40	30 38 29	48 27 24	24	24	48 27 24	24	24	24	24	48	48	
16	27 2 25 42	27 32 26	12 28 3	26 42 28 34	27 11 29 4	27 41 29 35	28 11 30 6 28 41	30 36 29	49 28 25	25	25	49 28 25	25	25	25	25	49	49	
18	27 0 25 42	27 31 26	12 28 1	26 42 28 32	27 12 29 3	27 42 29 33	28 12 30 4 28 41	30 34 29	50 29 26	26	26	50 29 26	26	26	26	26	50	50	
20	26 58 25 43	27 29 26	13 28 0	26 43 28 30	27 12 29 1	27 42 29 31	28 12 30 3 28 42	30 33 29	51 30 27	27	27	51 30 27	27	27	27	27	51	51	
22	26 57 25 44	27 27 26	13 27 58	26 43 28 29	27 13 28 59	27 43 29 30	28 13 30 2 28 43	30 31 29	52 31 28	28	28	52 31 28	28	28	28	28	52	52	
24	26 55 25 44	27 26 26	14 27 56	26 44 28 27	27 14 28 57	27 43 29 28	28 13 29 58 28 43	30 29 29	53 32 29	29	29	53 32 29	29	29	29	29	53	53	
26	26 54 25 45	27 24 26	14 27 55	26 44 28 25	27 14 28 56	27 44 29 26	28 14 29 57 28 44	30 27 29	54 33 30	30	30	54 33 30	30	30	30	30	54	54	
28	26 52 25 45	27 23 26	15 27 53	26 45 28 24	27 15 28 54	27 45 29 25	28 14 29 55 28 44	30 26 29	55 34 31	31	31	55 34 31	31	31	31	31	55	55	
30	26 51 25 46	27 21 26	16 27 51	26 45 28 22	27 15 28 52	27 45 29 23	28 15 29 53 28 45	30 24 29	56 35 32	32	32	56 35 32	32	32	32	32	56	56	
32	26 49 25 46	27 19 26	17 27 50	26 46 28 20	27 16 28 51	27 46 29 21	28 16 29 51 28 45	30 22 29	57 36 33	33									

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (60° and 61°)																
App. Alt.	Minutes of Moon's Hor. Parallax.														Seconds of H. P.	
	54'		55'		56'		57'		58'		59'		60'		61'	
	60°	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Alt.
0'	26 27	25 54	26 57	26 24	27 27	26 54	27 57	27 24	28 27	27 54	28 57	28 24	29 27	28 54	29 57	29 24
2	26 25	25 54	26 55	26 24	27 25	26 54	27 55	27 25	28 25	27 54	28 55	28 25	29 25	28 55	29 55	29 25
4	26 24	25 55	26 54	26 25	27 24	26 55	27 54	27 25	28 23	27 55	28 53	28 25	29 23	28 55	29 53	29 25
6	26 22	25 55	26 52	26 25	27 22	26 55	27 52	27 26	28 22	27 56	28 52	28 26	29 22	28 56	29 51	29 26
8	26 20	25 56	26 50	26 26	27 20	26 56	27 50	27 26	28 20	27 56	28 50	28 26	29 20	28 56	29 50	29 26
10	26 19	25 57	26 49	26 26	27 19	26 56	27 48	27 27	28 18	27 57	28 48	28 27	29 18	28 57	29 48	29 27
12	26 17	25 57	26 47	26 27	27 17	26 57	27 47	27 27	28 17	27 57	28 46	28 27	29 16	28 57	29 46	29 28
14	26 16	25 58	26 45	26 28	27 15	26 57	27 45	27 28	28 15	27 58	28 45	28 28	29 14	28 58	29 44	29 28
16	26 14	25 58	26 44	26 28	27 14	26 58	27 43	27 28	28 13	27 58	28 43	28 28	29 13	28 58	29 42	29 29
18	26 12	25 59	26 42	26 29	27 12	26 58	27 42	27 29	28 11	27 59	28 41	28 29	29 11	28 59	29 41	29 29
20	26 11	25 59	26 41	26 29	27 10	26 59	27 40	27 29	28 10	27 59	28 39	28 29	29 9	0 29	39	29 30
22	26 9	26 0	26 39	26 30	27 9	27 0	27 38	27 30	28 8	28 0	28 38	28 30	29 7	29 0	37	29 31
24	26 8	26 0	26 37	26 30	27 7	27 0	27 37	27 30	28 6	28 1	28 36	28 31	29 6	29 0	35	29 31
26	26 6	26 1	26 36	26 31	27 5	27 1	27 35	27 31	28 5	28 1	28 34	28 31	29 4	29 1	33	29 32
28	26 4	26 1	26 34	26 31	27 4	27 1	27 33	27 32	28 3	28 2	28 32	28 32	29 2	29 2	31	29 32
30	26 3	26 2	26 32	26 32	27 2	27 2	27 32	27 32	28 1	28 2	28 31	28 32	29 0	29 3	29	29 33
32	26 1	26 2	26 31	26 32	27 0	27 2	27 30	27 33	27 59	28 3	28 29	28 33	28 58	29 3	28	29 34
34	26 0	26 3	26 29	26 33	26 59	27 3	27 28	27 33	27 58	28 3	28 27	28 34	28 57	29 4	29	29 34
36	25 58	26 3	26 28	26 33	26 57	27 4	27 26	27 34	27 56	28 4	28 25	28 34	28 55	29 4	29	29 35
38	25 56	26 4	26 26	26 34	26 55	27 4	27 25	27 34	27 54	28 4	28 24	28 35	28 53	29 5	29	29 35
40	25 55	26 4	26 24	26 35	26 54	27 5	27 23	27 35	27 52	28 5	28 22	28 35	28 51	29 6	29	29 36
42	25 53	26 5	26 23	26 35	26 52	27 5	27 21	27 36	27 51	28 6	28 20	28 36	28 50	29 6	29	29 36
44	25 52	26 5	26 21	26 36	26 50	27 6	27 20	27 36	27 49	28 6	28 18	28 37	28 48	29 7	29	29 37
46	25 50	26 6	26 19	26 36	26 49	27 6	27 18	27 37	27 47	28 7	28 17	28 37	28 46	29 7	29	29 38
48	25 48	26 7	26 18	26 37	26 47	27 7	27 16	27 37	27 46	28 7	28 15	28 38	28 44	29 8	29	29 38
50	25 47	26 7	26 16	26 37	26 45	27 8	27 15	27 38	27 44	28 8	28 13	28 38	28 42	29 9	29	29 39
52	25 45	26 8	26 15	26 38	26 44	27 8	27 13	27 38	27 42	28 9	28 11	28 39	28 41	29 9	29	29 39
54	25 44	26 8	26 13	26 38	26 42	27 9	27 11	27 39	27 40	28 9	28 10	28 39	28 39	29 10	29	29 40
56	25 42	26 9	26 11	26 39	26 40	27 9	27 10	27 39	27 39	28 10	28 8	28 40	28 37	29 10	29	29 41
58	25 40	26 9	26 10	26 39	26 39	27 10	27 8	27 40	27 37	28 10	28 6	28 41	28 36	29 11	29	29 41
61°	54'	55'	56'	57'	58'	59'	60'	61'								
0'	25 39	26 10	26 8	26 40	26 37	27 10	27 6	27 41	27 35	28 11	28 4	28 41	28 33	29 11	29	3 29 42
2	25 37	26 10	26 6	26 41	26 35	27 11	27 4	27 41	27 34	28 11	28 3	28 42	28 32	29 12	29	1 29 42
4	25 36	26 11	26 5	26 41	26 34	27 11	27 3	27 42	27 32	28 12	28 0	28 42	28 30	29 13	29	59 29 43
6	25 34	26 11	26 3	26 42	26 32	27 12	27 1	27 42	27 30	28 13	27 59	28 43	28 28	29 13	29	57 29 44
8	25 32	26 12	26 1	26 42	26 30	27 12	26 59	27 43	27 28	28 13	27 57	28 43	28 26	29 14	29	55 29 44
10	25 31	26 12	26 0	26 43	26 29	27 13	26 58	27 43	27 27	28 14	27 56	28 44	28 24	29 15	29	53 29 45
12	25 29	26 13	25 58	26 43	26 27	27 13	26 56	27 44	27 25	28 14	27 54	28 44	28 23	29 15	29	52 29 45
14	25 28	26 13	25 56	26 44	26 25	27 14	26 54	27 44	27 23	28 15	27 52	28 45	28 21	29 15	29	50 29 46
16	25 26	26 14	25 55	26 44	26 24	27 15	26 53	27 45	27 21	28 15	27 50	28 46	28 19	29 16	29	48 29 46
18	25 24	26 14	25 53	26 45	26 22	27 15	26 51	27 45	27 20	28 16	27 48	28 46	28 17	29 17	29	46 29 47
20	25 23	26 15	25 51	26 45	26 20	27 16	26 49	27 46	27 18	28 16	27 47	28 47	28 16	29 18	29	44 29 47
22	25 21	26 15	25 50	26 46	26 19	27 16	26 47	27 47	27 16	28 17	27 45	28 47	28 14	29 18	29	42 29 48
24	25 19	26 16	25 48	26 46	26 17	27 17	26 46	27 47	27 14	28 17	27 43	28 48	28 12	29 19	29	40 29 49
26	25 18	26 16	25 47	26 47	26 15	27 17	26 44	27 48	27 13	28 18	27 41	28 48	28 10	29 19	29	38 29 49
28	25 16	26 17	25 45	26 47	26 14	27 18	26 42	27 48	27 11	28 18	27 40	28 49	28 8	29 19	29	37 29 50
30	25 15	26 17	25 43	26 48	26 12	27 18	26 41	27 49	27 9	28 19	27 38	28 49	28 6	29 20	29	35 29 50
32	25 13	26 18	25 42	26 48	26 10	27 19	26 39	27 49	27 7	28 20	27 36	28 50	28 5	29 21	29	33 29 51
34	25 11	26 18	25 40	26 49	26 9	27 19	26 37	27 50	27 6	28 20	27 34	28 51	28 3	29 21	29	31 29 52
36	25 10	26 19	25 38	26 49	26 7	27 20	26 35	27 50	27 4	28 21	27 33	28 51	28 1	29 22	29	30 29 52
38	25 8	26 19	25 37	26 50	26 5	27 20	26 34	27 51	27 2	28 22	27 31	28 52	27 59	29 22	29	28 29 53
40	25 7	26 20	25 35	26 50	26 4	27 21	26 32	27 51	27 0	28 22	27 29	28 52	27 57	29 23	29	26 29 53
42	25 5	26 20	25 33	26 51	26 2	27 21	26 30	27 52	26 59	28 22	27 27	28 53	27 56	29 23	29	24 29 54
44	25 3	26 21	25 32	26 51	26 0	27 22	26 29	27 52	26 57	28 23	27 25	28 53	27 54	29 24	29	22 29 54
46	25 2	26 21	25 30	26 52	25 59	27 22	26 27	27 53	26 55	28 23	27 24	28 54	27 52	29 24	29	20 29 55
48	25 0	26 22	25 29	26 52	25 57	27 23	26 25	27 54	26 54	28 24	27 22	28 54	27 50	29 25	29	18 29 56
50	24 59	26 22	25 27	26 53	25 55	27 23	26 24	27 54	26 52	28 25	27 20	28 55	27 48	29 26	29	17 29 56
52	24 57	26 23	25 25	26 54	25 54	27 24	26 22	27 55	26 50	28 26	27 18	28 56	27 47	29 26	29	15 29 57
54	24 55	26 23	25 24	26 54	25 52	27 25	26 20	27 55	26 48	28 26	27 17	28 56	27 45	29 27	29	13 29 57
56	24 54	26 24	25 22	26 55	25 50	27 25	26 18	27 56	26 47	28 26	27 15	28 57	27 43	29 27	29	11 29 58
58	24 52	26 24	25 20	26 55	25 48	27 26	26 17	27 56	26 45	28 27	27 13	28 57	27 41	29 28	29	10 29 58

(62° and 63°)		The Correction of the Moon's Altitude, and the Aux. Angle A.														(w.)	
App. Alt.	Minutes of Moon's Hor. Parallax.														Seconds of H. P.		
	54'		55'		56'		57'		58'		59'		60'		61'		
62°	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	
	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	
0'	24 50	26 25	25 19	26 56	25 47	27 26	26 15	27 57	26 43	28 27	27 11	28 58	27 39	29 28	28 8	29 59	
2	24 49	26 25	25 17	26 56	25 45	27 27	26 13	27 57	26 41	28 28	27 10	28 58	27 38	29 29	23	6 30 0	
4	24 47	26 26	25 15	26 57	25 43	27 27	26 12	27 58	26 40	28 28	27 8	28 59	27 36	29 29	28	4 30 0	
6	24 46	26 26	25 14	26 57	25 42	27 28	26 10	27 58	26 38	28 29	27 6	29 0	27 34	29 30	28	2 30 1	
8	24 44	26 27	25 12	26 58	25 40	27 28	26 8	27 59	26 36	28 30	27 4	29 0	27 32	29 31	28	0 30 1	
10	24 42	26 27	25 10	26 58	25 38	27 29	26 6	27 59	26 34	28 30	27 2	29 1	27 30	29 31	27	58 30 2	
12	24 41	26 28	25 9	26 59	25 37	27 29	26 5	28 0	26 33	28 30	27 1	29 1	27 29	29 32	27	57 30 2	
14	24 39	26 28	25 7	26 59	25 35	27 30	26 3	28 0	26 31	28 31	26 59	29 2	27 27	29 32	27	55 30 3	
16	24 37	26 29	25 5	27 0	25 33	27 30	26 1	28 1	26 29	28 32	26 57	29 2	27 25	29 33	27	53 30 3	
18	24 36	26 29	25 4	27 0	25 32	27 31	26 0	28 1	26 27	28 32	26 55	29 3	27 23	29 33	27	51 30 4	
20	24 34	26 30	25 2	27 1	25 30	27 31	25 58	28 2	26 26	28 33	26 54	29 3	27 21	29 34	27	49 30 5	
22	24 33	26 30	25 0	27 1	25 28	27 32	26 56	28 2	26 24	28 33	26 52	29 4	27 20	29 34	27	47 30 5	
24	24 31	26 31	24 59	27 2	25 27	27 32	25 54	28 3	26 22	28 34	26 50	29 4	27 18	29 35	27	46 30 6	
26	24 29	26 31	24 57	27 2	25 25	27 33	25 53	28 3	26 20	28 34	26 48	29 5	27 16	29 36	27	44 30 6	
28	24 28	26 32	24 55	27 3	25 23	27 33	25 51	28 4	26 19	28 35	26 46	29 5	27 14	29 36	27	42 30 7	
30	24 26	26 32	24 54	27 3	25 21	27 34	25 49	28 4	26 17	28 35	26 45	29 6	27 12	29 37	27	40 30 7	
32	24 24	26 33	24 52	27 4	25 20	27 34	25 47	28 5	26 15	28 36	26 43	29 6	27 10	29 37	27	38 30 8	
34	24 23	26 33	24 50	27 4	25 18	27 35	25 46	28 5	26 13	28 36	26 41	29 7	27 9	29 38	27	36 30 9	
36	24 21	26 34	24 49	27 5	25 16	27 35	25 44	28 6	26 12	28 37	26 39	29 8	27 7	29 38	27	34 30 9	
38	24 20	26 34	24 47	27 5	25 15	27 36	25 42	28 6	26 10	28 37	26 37	29 8	27 5	29 39	27	33 30 10	
40	24 18	26 35	24 45	27 6	25 13	27 36	25 41	28 7	26 8	28 38	26 36	29 9	27 3	29 39	27	31 30 10	
42	24 16	26 35	24 44	27 6	25 11	27 37	25 39	28 8	26 6	28 38	26 34	29 9	27 1	29 40	27	29 30 11	
44	24 15	26 36	24 42	27 7	25 10	27 37	25 37	28 8	26 5	28 39	26 32	29 10	27 0	29 40	27	27 30 11	
46	24 13	26 36	24 41	27 7	25 8	27 38	25 35	28 9	26 3	28 39	26 30	29 10	26 58	29 41	27	25 30 12	
48	24 11	26 37	24 39	27 8	25 6	27 38	25 34	28 9	26 1	28 40	26 29	29 11	26 56	29 42	27	23 30 12	
50	24 10	26 37	24 37	27 8	25 5	27 39	25 32	28 10	25 59	28 41	26 27	29 11	26 54	29 42	27	22 30 13	
52	24 8	26 38	24 36	27 9	25 3	27 39	25 30	28 10	25 58	28 41	26 25	29 12	26 52	29 43	27	20 30 14	
54	24 6	26 38	24 34	27 9	25 0	27 40	25 29	28 11	25 56	28 42	26 23	29 12	26 51	29 43	27	18 30 14	
56	24 5	26 39	24 32	27 10	24 59	27 40	25 27	28 11	25 54	28 42	26 21	29 13	26 49	29 44	27	16 30 15	
58	24 3	26 39	24 31	27 10	24 58	27 41	25 25	28 12	25 52	28 43	26 20	29 13	26 47	29 44	27	14 30 15	
63°	54'	55'	56'	57'	58'	59'	60'	61'									
0'	24 26 40	24 29 27 11	24 56 27 41	25 23 28 12	25 51 28 43	26 18 29 14	26 45 29 45	27 12 30 16									
2	24 0 26 40	24 27 27 11	24 54 27 42	25 22 28 13	25 49 28 44	26 16 29 15	26 43 29 45	27 11 30 16									
4	23 58 26 41	24 26 27 12	24 53 27 42	25 20 28 13	25 47 28 44	26 14 29 15	26 41 29 46	27 9 30 17									
6	23 57 26 41	24 24 27 12	24 51 27 43	25 18 28 14	25 45 28 45	26 13 29 16	26 40 29 47	27 7 30 17									
8	23 55 26 42	24 22 27 13	24 49 27 43	25 16 28 14	25 44 28 45	26 11 29 16	26 38 29 47	27 5 30 18									
10	23 53 26 42	24 20 27 13	24 48 27 44	25 15 28 15	25 42 28 46	26 9 29 17	26 36 29 48	27 3 30 18									
12	23 52 26 43	24 19 27 14	24 46 27 44	25 13 28 15	25 40 28 46	26 7 29 17	26 34 29 48	27 1 30 19									
14	23 50 26 43	24 17 27 14	24 44 27 45	25 11 28 16	25 38 28 47	26 5 29 18	26 32 29 49	26 59 30 20									
16	23 48 26 44	24 15 27 15	24 42 27 45	25 9 28 16	25 37 28 47	26 4 29 18	26 31 29 49	26 58 30 20									
18	23 47 26 44	24 14 27 15	24 41 27 46	25 8 28 17	25 35 28 48	26 2 29 19	26 29 29 50	26 56 30 21									
20	23 45 26 44	24 12 27 15	24 39 27 46	25 6 28 17	25 33 28 48	26 0 29 19	26 27 29 50	26 54 30 21									
22	23 44 26 45	24 10 27 16	24 37 27 47	25 4 28 18	25 31 28 49	25 58 29 20	26 25 29 51	26 52 30 22									
24	23 42 26 45	24 9 27 16	24 36 27 47	25 3 28 18	25 29 28 49	25 56 29 20	26 23 29 51	26 50 30 22									
26	23 40 26 46	24 7 27 17	24 34 27 48	25 1 28 19	25 28 28 50	25 55 29 21	26 21 29 52	26 48 30 23									
28	23 39 26 46	24 5 27 17	24 32 27 48	24 59 28 19	25 26 28 50	25 53 29 21	26 20 29 52	26 46 30 23									
30	23 37 26 47	24 4 27 18	24 30 27 49	24 57 28 20	25 24 28 51	25 51 29 22	26 18 29 53	26 44 30 24									
32	23 35 26 47	24 2 27 18	24 29 27 49	24 56 28 20	25 22 28 51	25 49 29 22	26 16 29 53	26 43 30 24									
34	23 34 26 48	24 0 27 19	24 27 27 50	24 54 28 21	25 21 28 52	25 47 29 23	26 14 29 54	26 41 30 25									
36	23 32 26 48	23 59 27 19	24 25 27 50	24 52 28 21	25 19 28 52	25 45 29 23	26 12 29 54	26 39 30 25									
38	23 30 26 49	23 57 27 20	24 24 27 51	24 50 28 22	25 17 28 53	25 44 29 24	26 10 29 55	26 37 30 26									
40	23 29 26 49	23 55 27 20	24 22 27 51	24 49 28 22	25 15 28 53	25 42 29 24	26 8 29 55	26 35 30 26									
42	23 27 26 50	23 54 27 21	24 20 27 52	24 47 28 23	25 13 28 54	25 40 29 25	26 7 29 56	26 33 30 27									
44	23 25 26 50	23 52 27 21	24 18 27 52	24 45 28 23	25 12 28 54	25 38 29 25	26 5 29 56	26 31 30 28									
46	23 24 26 51	23 50 27 22	24 17 27 53	24 43 28 24	25 10 28 55	25 36 29 26	26 3 29 57	26 29 30 28									
48	23 22 26 51	23 49 27 22	24 15 27 53	24 42 28 24	25 8 28 55	25 35 29 26	26 1 29 58	26 28 30 29									
50	23 20 26 52	23 47 27 23	24 13 27 54	24 40 28 25	25 6 28 56	25 33 29 27	26 59 29 58	26 26 30 29									
52	23 19 26 52	23 45 27 23	24 12 27 54	24 38 28 25	25 5 28 56	25 31 29 28	26 57 29 59	26 24 30 30									
54	23 17 26 53	23 44 27 24	24 10 27 55	24 36 28 26	25 3 28 57	25 29 29 28	26 55 29 59	26 22 30 30									
56	23 16 26 53	23 42 27 24	24 8 27 55	24 35 28 26	25 1 28 57	25 27 29 29	26 54 30 0	26 20 30 31									
58	23 14 26 54	23 40 27 25	24 6 27 56	24 33 28 27	24 59 28 58	25 26 29 29	26 52 30 1	26 18 30 31									

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (64° and 65°)																			
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.		
	54'		55'		56'		57'		58'		59'		60'		61'		"	"	"
64°	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	1	2	3
0'	23 12	26 54	23 39	27 25	24 5	27 56	24 31	28 27	24 57	28 58	25 24	29 30	25 50	30 1	26 16	30 32	1	0	1
2	23 11	26 55	23 37	27 26	24 3	27 57	24 29	28 28	24 56	28 59	25 22	29 30	25 48	30 1	26 15	30 33	2	1	2
4	23 9	26 55	23 35	27 26	24 1	27 57	24 28	28 28	24 54	28 59	25 20	29 31	25 46	30 2	26 13	30 33	3	2	3
6	23 7	26 55	23 34	27 27	24 0	27 58	24 26	28 29	24 52	29 0	25 18	29 31	25 45	30 2	26 11	30 33	4	3	4
8	23 6	26 56	23 32	27 27	23 58	27 58	24 24	28 29	24 50	29 0	25 17	29 32	25 43	30 3	26 9	30 34	5	4	5
10	23 4	26 56	23 30	27 28	23 56	27 59	24 22	28 30	24 49	29 1	25 15	29 32	25 41	30 3	26 7	30 34	6	5	6
12	23 2	26 57	23 28	27 28	23 55	27 59	24 21	28 30	24 47	29 1	25 13	29 33	25 39	30 4	26 5	30 35	7	6	7
14	23 1	26 57	23 27	27 28	23 53	28 0	24 19	28 31	24 45	29 2	25 11	29 33	25 37	30 4	26 3	30 36	8	7	8
16	22 59	26 58	23 25	27 29	23 51	28 0	24 17	28 31	24 43	29 2	25 9	29 34	25 35	30 5	26 0	30 36	9	8	9
18	22 58	26 58	23 23	27 29	23 49	28 1	24 15	28 32	24 41	29 3	25 7	29 34	25 33	30 5	25 59	30 37	10	9	10
20	22 56	26 59	23 22	27 30	23 48	28 1	24 14	28 32	24 40	29 3	25 6	29 35	25 32	30 6	25 58	30 37	11	10	11
22	22 54	26 59	23 20	27 30	23 46	28 2	24 12	28 33	24 38	29 4	25 4	29 35	25 30	30 6	25 56	30 38	12	11	12
24	22 52	27 0	23 18	27 31	23 44	28 2	24 10	28 33	24 36	29 5	25 2	29 36	25 28	30 7	25 54	30 38	13	12	13
26	22 51	27 0	23 17	27 31	23 43	28 3	24 8	28 34	24 34	29 5	25 0	29 36	25 26	30 7	25 52	30 39	14	13	14
28	22 49	27 1	23 15	27 32	23 41	28 3	24 7	28 34	24 32	29 6	24 58	29 37	25 24	30 8	25 50	30 39	15	14	15
30	22 47	27 1	23 13	27 32	23 39	28 4	24 5	28 35	24 31	29 6	24 57	29 37	25 22	30 8	25 48	30 40	16	15	16
32	22 46	27 2	23 12	27 32	23 37	28 4	24 4	28 35	24 29	29 7	24 55	29 38	25 20	30 9	25 46	30 40	17	16	17
34	22 44	27 2	23 10	27 33	23 36	28 5	24 2	28 36	24 27	29 7	24 53	29 38	25 19	30 10	25 44	30 41	18	17	18
36	22 42	27 3	23 8	27 34	23 34	28 5	24 0	28 36	24 25	29 8	24 51	29 39	25 17	30 10	25 43	30 41	19	18	19
38	22 41	27 3	23 6	27 34	23 32	28 6	23 58	28 37	24 24	29 8	24 49	29 39	25 15	30 11	25 41	30 42	20	19	20
40	22 39	27 4	23 5	27 35	23 30	28 6	23 56	28 37	24 22	29 9	24 47	29 40	25 13	30 11	25 39	30 42	21	20	21
42	22 37	27 4	23 3	27 35	23 29	28 7	23 54	28 38	24 20	29 9	24 46	29 40	25 11	30 12	25 37	30 43	22	21	22
44	22 36	27 4	23 1	27 36	23 27	28 7	23 53	28 38	24 18	29 10	24 44	29 41	25 9	30 12	25 35	30 43	23	22	23
46	22 34	27 5	23 0	27 36	23 25	28 7	23 51	28 39	24 16	29 10	24 42	29 41	25 8	30 13	25 33	30 44	24	23	24
48	22 32	27 5	22 58	27 37	23 24	28 8	23 49	28 39	24 15	29 11	24 40	29 42	25 6	30 13	25 31	30 44	25	24	25
50	22 31	27 6	22 56	27 37	23 22	28 8	23 47	28 40	24 13	29 11	24 38	29 42	25 4	30 14	25 29	30 45	26	25	26
52	22 29	27 6	22 55	27 38	23 20	28 9	23 46	28 40	24 11	29 12	24 37	29 43	25 2	30 14	25 28	30 46	27	26	27
54	22 27	27 7	22 53	27 38	23 18	28 9	23 44	28 41	24 9	29 12	24 35	29 43	25 0	30 15	25 26	30 46	28	27	28
56	22 26	27 7	22 51	27 38	23 17	28 10	23 42	28 41	24 7	29 13	24 33	29 44	24 58	30 15	25 24	30 47	29	28	29
58	22 24	27 8	22 50	27 39	23 15	28 10	23 40	28 42	24 6	29 13	24 31	29 44	24 56	30 16	25 22	30 47	30	29	30
65°	54'		55'		56'		57'		58'		59'		60'		61'		1	2	3
0'	22 22	27 8	22 48	27 39	23 13	28 11	23 39	28 42	24 4	29 13	24 29	29 45	24 55	30 16	25 20	30 48	1	0	1
2	22 21	27 8	22 46	27 40	23 11	28 11	23 37	28 43	24 2	29 14	24 27	29 45	24 53	30 17	25 18	30 48	2	1	2
4	22 19	27 9	22 44	27 40	23 10	28 12	23 35	28 43	24 0	29 14	24 26	29 46	24 51	30 17	25 16	30 49	3	2	3
6	22 17	27 9	22 43	27 41	23 8	28 12	23 33	28 44	23 58	29 15	24 24	29 46	24 49	30 18	25 14	30 49	4	3	4
8	22 16	27 10	22 41	27 41	23 6	28 13	23 31	28 44	23 57	29 15	24 22	29 47	24 47	30 18	25 12	30 50	5	4	5
10	22 14	27 10	22 39	27 42	23 4	28 13	23 30	28 44	23 55	29 16	24 20	29 47	24 45	30 19	25 10	30 50	6	5	6
12	22 12	27 11	22 38	27 42	23 3	28 13	23 28	28 45	23 53	29 16	24 18	29 48	24 43	30 19	25 9	30 51	7	6	7
14	22 11	27 11	22 36	27 43	23 1	28 14	23 26	28 45	23 51	29 17	24 16	29 48	24 42	30 20	25 7	30 51	8	7	8
16	22 9	27 12	22 34	27 43	22 59	28 14	23 24	28 46	23 49	29 17	24 15	29 49	24 40	30 20	25 5	30 52	9	8	9
18	22 7	27 12	22 32	27 43	22 58	28 15	23 23	28 46	23 48	29 18	24 13	29 49	24 38	30 21	25 3	30 52	10	9	10
20	22 6	27 13	22 31	27 44	22 56	28 15	23 21	28 47	23 46	29 18	24 11	29 50	24 36	30 21	25 1	30 53	11	10	11
22	22 4	27 13	22 29	27 44	22 54	28 16	23 19	28 47	23 44	29 19	24 9	29 50	24 34	30 22	24 59	30 53	12	11	12
24	22 2	27 13	22 27	27 45	22 52	28 16	23 17	28 48	23 42	29 19	24 7	29 51	24 32	30 22	24 57	30 54	13	12	13
26	22 1	27 14	22 26	27 45	22 51	28 17	23 16	28 48	23 41	29 20	24 5	29 51	24 30	30 23	24 55	30 54	14	13	14
28	21 59	27 14	22 24	27 46	22 49	28 17	23 14	28 49	23 39	29 20	24 4	29 52	24 29	30 23	24 53	30 55	15	14	15
30	21 57	27 15	22 22	27 46	22 47	28 18	23 12	28 49	23 37	29 21	24 2	29 52	24 27	30 24	24 52	30 55	16	15	16
32	21 56	27 15	22 20	27 47	22 45	28 18	23 10	28 50	23 35	29 21	24 0	29 53	24 25	30 24	24 50	30 56	17	16	17
34	21 54	27 16	22 19	27 47	22 44	28 19	23 8	28 50	23 33	29 22	23 58	29 53	24 23	30 25	24 48	30 56	18	17	18
36	21 52	27 16	22 17	27 47	22 42	28 19	23 7	28 51	23 32	29 22	23 56	29 54	24 21	30 25	24 46	30 57	19	18	19
38	21 51	27 16	22 15	27 48	22 40	28 20	23 5	28 51	23 30	29 23	23 54	29 54	24 19	30 26	24 44	30 57	20	19	20
40	21 49	27 17	22 14	27 48	22 38	28 20	23 3	28 51	23 28	29 23	23 53	29 54	24 17	30 26	24 42	30 58	21	20	21
42	21 47	27 17	22 12	27 49	22 37	28 20	23 1	28 52	23 26	29 23	23 51	29 55	24 16	30 27	24 40	30 58	22	21	22
44	21 46	27 18	22 10	27 49	22 35	28 21	23 0	28 52	23 24	29 24	23 49	29 55	24 14	30 27	24 38	30 59	23	22	23
46	21 44	27 18	22 9	27 50	22 33	28 21	22 58	28 53	23 23	29 24	23 47	29 56	24 12	30 28	24 36	30 59	24	23	24
48	21 42	27 19	22 7	27 50	22 32	28 22	22 56	28 53	23 21	29 25	23 45	29 56	24 10	30 28	24 35	31 0	25	24	25
50	21 41	27 19	22 5	27 51	22 30	28 22	22 54	28 54	23 19	29 25	23 43	29 57	24 8	30 28	24 33	31 0	26	25	26
52	21 39	27 20	22 3	27 51	22 28	28 23	22 53	28 54	23 17	29 26	23 42	29 57	24 6	30 29	24 31	31 1	27	26	27
54	21 37	27 20	22 1	27 52	22 26	28 23	22 51	28 55	23 15	29 26	23 40	29 58	24 4	30 29	24 29	31 1	28	27	28
56	21 36	27 20	22 0	27 52	22 25	28 24	22 49	28 55	23 14	29 27	23 38	29 58	24 2	30 30	24 27	31 2	29	28	29
58	21 34	27 21	21 58	27 52	22 23	28 24	22 47	28 56	23 12	29 27	23 36	29 59	24 1	30 30	24 25	31 2	30	29	30

(66° and 67°)		The Correction of the Moon's Altitude, and the Aux. Angle A.														(w.)		
App. Alt.		Minutes of Moon's Hor. Parallax.														Seconds of H. P.		
		54'		55'		56'		57'		58'		59'		60'		61'		
66°	Corr. + 60°	A 60°	Corr. + 60°	A 60°	Corr. + 60°	A 60°	Corr. + 60°	A 60°	Corr. + 60°	A 60°	Corr. + 60°	A 60°	Corr. + 60°	A 60°	Corr. + 60°	A 60°	Corr. + 60°	A 60°
0'	21 32	27 21	21 57	27 53	22 21	28 24	22 45	28 56	23 10	29 28	23 34	29 59	23 59	30 31	24 23	31 3	2 1	1
2	21 31	27 22	21 55	27 53	22 19	28 25	22 44	28 57	23 8	29 28	23 32	30 0	23 57	30 31	24 21	31 3	2 1	1
4	21 29	27 22	21 53	27 54	22 18	28 25	22 42	28 57	23 6	29 29	23 31	30 0	23 55	30 32	24 19	31 4	2 2	2
6	21 27	27 23	21 52	27 54	22 16	28 26	22 40	28 57	23 4	29 29	23 29	30 1	23 53	30 32	24 17	31 4	2 3	3
8	21 26	27 23	21 50	27 55	22 14	28 26	22 38	28 58	23 3	29 30	23 27	30 1	23 51	30 33	24 16	31 5	2 4	4
10	21 24	27 23	21 48	27 55	22 12	28 27	22 37	28 58	23 1	29 30	23 25	30 2	23 49	30 33	24 14	31 5	2 5	5
12	21 22	27 24	21 46	27 56	22 11	28 27	22 35	28 59	22 59	29 30	23 23	30 2	23 47	30 34	24 12	31 5	2 6	6
14	21 20	27 24	21 45	27 56	22 9	28 28	22 33	28 59	22 57	29 31	23 21	30 3	23 46	30 34	24 10	31 6	2 7	7
16	21 19	27 25	21 43	27 56	22 7	28 28	22 31	29 0	22 55	29 31	23 19	30 3	23 44	30 35	24 8	31 6	2 8	8
18	21 17	27 25	21 41	27 57	22 5	28 28	22 29	29 0	22 54	29 32	23 18	30 4	23 42	30 35	24 6	31 7	2 9	9
20	21 15	27 25	21 39	27 57	22 4	28 29	22 28	29 1	22 52	29 32	23 16	30 4	23 40	30 36	24 4	31 7	2 10	10
22	21 14	27 26	21 38	27 58	22 2	28 29	22 26	29 1	22 50	29 33	23 14	30 4	23 38	30 36	24 2	31 8	2 11	11
24	21 12	27 26	21 36	27 58	22 0	28 30	22 24	29 1	22 48	29 33	23 12	30 5	23 36	30 37	24 0	31 8	2 12	12
26	21 10	27 27	21 34	27 59	21 58	28 30	22 22	29 2	22 46	29 34	23 10	30 5	23 34	30 37	23 58	31 9	2 13	13
28	21 9	27 27	21 33	27 59	21 57	28 31	22 21	29 2	22 44	29 34	23 8	30 6	23 32	30 38	23 56	31 9	2 14	14
30	21 7	27 28	21 31	27 59	21 55	28 31	22 19	29 3	22 43	29 35	23 7	30 6	23 30	30 38	23 54	31 10	2 15	15
32	21 5	27 28	21 29	28 0	21 53	28 32	22 17	29 3	22 41	29 35	23 5	30 7	23 29	30 38	23 53	31 10	2 16	16
34	21 4	27 29	21 27	28 0	21 51	28 32	22 15	29 4	22 39	29 35	23 3	30 7	23 27	30 39	23 51	31 11	2 17	17
36	21 2	27 29	21 26	28 1	21 50	28 32	22 13	29 4	22 37	29 36	23 1	30 8	23 25	30 39	23 49	31 11	2 18	18
38	21 0	27 29	21 24	28 1	21 48	28 33	22 12	29 5	22 35	29 36	22 59	30 8	23 23	30 40	23 47	31 12	2 19	19
40	20 58	27 30	21 22	28 2	21 46	28 33	22 10	29 5	22 34	29 37	22 57	30 9	23 21	30 40	23 45	31 12	2 20	20
42	20 57	27 30	21 21	28 2	21 44	28 34	22 8	29 6	22 32	29 37	22 55	30 9	23 19	30 41	23 43	31 13	2 21	21
44	20 55	27 31	21 19	28 2	21 43	28 34	22 6	29 6	22 30	29 38	22 54	30 10	23 17	30 41	23 41	31 13	2 22	22
46	20 53	27 31	21 17	28 3	21 41	28 35	22 4	29 6	22 28	29 38	22 52	30 10	23 16	30 42	23 39	31 14	2 23	23
48	20 52	27 31	21 15	28 3	21 39	28 35	22 3	29 7	22 26	29 39	22 50	30 10	23 14	30 42	23 37	31 14	2 24	24
50	20 50	27 32	21 14	28 4	21 37	28 35	22 1	29 7	22 25	29 39	22 48	30 11	23 12	30 43	23 35	31 14	2 25	25
52	20 48	27 32	21 12	28 4	21 36	28 36	21 59	29 8	22 23	29 40	22 46	30 11	23 10	30 43	23 33	31 15	2 26	26
54	20 47	27 33	21 10	28 5	21 34	28 36	21 57	29 8	22 21	29 40	22 44	30 12	23 8	30 44	23 32	31 15	2 27	27
56	20 45	27 33	21 9	28 5	21 32	28 37	21 56	29 9	22 19	29 40	22 43	30 12	23 6	30 44	23 30	31 16	2 28	28
58	20 43	27 34	21 7	28 5	21 30	28 37	21 54	29 9	22 17	29 41	22 41	30 13	23 4	30 45	23 28	31 16	2 29	29
67°	54'	55'	56'	57'	58'	59'	60'	61'	62'	63'	64'	65'	66'	67'	68'	69'	70'	71'
0'	20 42	27 34	21 5	28 6	21 29	28 38	21 52	29 9	22 15	29 41	22 39	30 13	23 2	30 45	23 26	31 17	2 30	30
2	20 40	27 34	21 3	28 6	21 27	28 38	21 50	29 10	22 14	29 42	22 37	30 14	23 1	30 46	23 24	31 17	2 31	31
4	20 38	27 35	21 2	28 7	21 25	28 39	21 49	29 10	22 12	29 42	22 35	30 14	22 59	30 46	23 22	31 18	2 32	32
6	20 36	27 35	21 0	28 7	21 23	28 39	21 47	29 11	22 10	29 43	22 33	30 15	22 57	30 46	23 20	31 18	2 33	33
8	20 35	27 36	20 58	28 7	21 22	28 39	21 45	29 11	22 8	29 43	22 31	30 15	22 55	30 47	23 18	31 19	2 34	34
10	20 33	27 36	20 56	28 8	21 20	28 40	21 43	29 12	22 6	29 44	22 30	30 15	22 53	30 47	23 16	31 19	2 35	35
12	20 31	27 36	20 55	28 8	21 18	28 40	21 42	29 12	22 4	29 44	22 28	30 16	22 51	30 48	23 14	31 20	2 36	36
14	20 30	27 37	20 53	28 9	21 16	28 41	21 40	29 13	22 3	29 44	22 26	30 16	22 49	30 48	23 12	31 20	2 37	37
16	20 28	27 37	20 51	28 9	21 14	28 41	21 38	29 13	22 1	29 45	22 24	30 17	22 47	30 49	23 10	31 21	2 38	38
18	20 26	27 38	20 49	28 10	21 13	28 41	21 37	29 13	21 59	29 45	22 22	30 17	22 45	30 49	23 8	31 21	2 39	39
20	20 25	27 38	20 48	28 10	21 11	28 42	21 35	29 14	21 57	29 46	22 20	30 18	22 43	30 49	23 6	31 21	2 40	40
22	20 23	27 39	20 46	28 10	21 9	28 42	21 33	29 14	21 55	29 46	22 18	30 18	22 41	30 50	23 5	31 22	2 41	41
24	20 21	27 39	20 44	28 11	21 7	28 43	21 31	29 15	21 53	29 47	22 16	30 19	22 40	30 50	23 3	31 22	2 42	42
26	20 19	27 39	20 43	28 11	21 6	28 43	21 29	29 15	21 52	29 47	22 15	30 19	22 38	30 51	23 1	31 23	2 43	43
28	20 18	27 40	20 41	28 12	21 4	28 44	21 27	29 16	21 50	29 47	22 13	30 19	22 36	30 51	22 59	31 23	2 44	44
30	20 16	27 40	20 39	28 12	21 2	28 44	21 25	29 16	21 48	29 48	22 11	30 20	22 34	30 52	22 57	31 24	2 45	45
32	20 14	27 41	20 37	28 13	21 0	28 44	21 24	29 16	21 46	29 48	22 9	30 20	22 32	30 52	22 55	31 24	2 46	46
34	20 13	27 41	20 36	28 13	20 59	28 45	21 22	29 17	21 44	29 49	22 7	30 21	22 30	30 53	22 53	31 25	2 47	47
36	20 11	27 41	20 34	28 13	20 57	28 45	21 20	29 17	21 42	29 49	22 5	30 21	22 28	30 53	22 51	31 25	2 48	48
38	20 9	27 42	20 32	28 14	20 55	28 46	21 18	29 18	21 41	29 50	22 3	30 22	22 26	30 54	22 49	31 26	2 49	49
40	20 8	27 42	20 30	28 14	20 53	28 46	21 16	29 18	21 39	29 50	22 2	30 22	22 24	30 54	22 47	31 26	2 50	50
42	20 6	27 43	20 29	28 15	20 51	28 47	21 14	29 19	21 37	29 51	22 0	30 23	22 23	30 55	22 45	31 27	2 51	51
44	20 4	27 43	20 27	28 15	20 50	28 47	21 12	29 19	21 35	29 51	21 58	30 23	22 21	30 55	22 43	31 27	2 52	52
46	20 2	27 43	20 25	28 15	20 48	28 47	21 11	29 20	21 33	29 52	21 56	30 24	22 19	30 56	22 42	31 28	2 53	53
48	20 1	27 44	20 23	28 16	20 46	28 48	21 9	29 20	21 31	29 52	21 54	30 24	22 17	30 56	22 40	31 28	2 54	54
50	19 59	27 44	20 22	28 16	20 44	28 48	21 7	29 20	21 30	29 52	21 52	30 24	22 15	30 56	22 38	31 28	2 55	55
52	19 57	27 45	20 20	28 17	20 43	28 49	21 5	29 21	21 28	29 53	21 50	30 25	22 13	30 57	22 36	31 29	2 56	56
54	19 56	27 45	20 18	28 17	20 41	28 49	21 3	29 21	21 26	29 53	21 49	30 25	22 11	30 57	22 34	31 29	2 57	57
56	19 54	27 46	20 17	28 18	20 39	28 50	21 2	29 22	21 24	29 54	21 47	30 26	22 9	30 58	22 32	31 30	2	

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (68° and 69°)		Minutes of Moon's Hor. Parallax.																Seconds of H. P.				
App. Alt.		54'		55'		56'		57'		58'		59'		60'		61'						
68		Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A					
		+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°	+	60°					
0'	19 51	27 46	20 13	28 18	20 36	28 50	20 58	29 23	21 20	29 55	21 43	30 27	22 53	30 59	22 28	31 31	1	0	1			
2	19 49	27 47	20 11	28 19	20 34	28 51	20 56	29 23	21 19	29 55	21 41	30 27	22 43	30 59	22 26	31 31	3	1	2			
4	19 47	27 47	20 10	28 19	20 32	28 51	20 54	29 23	21 17	29 55	21 39	30 28	22 23	0	22 24	31 32	5	2	3			
6	19 45	27 48	20 8	28 20	20 30	28 52	20 53	29 24	21 15	29 56	21 37	30 28	22 03	0	22 22	31 32	7	3	4			
8	19 44	27 48	20 6	28 20	20 28	28 52	20 51	29 24	21 13	29 56	21 35	30 28	21 58	31	0	22 20	31 33	9	3	5		
10	19 42	27 48	20 4	28 20	20 27	28 53	20 49	29 25	21 11	29 57	21 34	30 29	21 56	31	1	22 18	31 33	11	3	6		
12	19 40	27 49	20 3	28 21	20 25	28 53	20 47	29 25	21 9	29 57	21 32	30 29	21 54	31	1	22 16	31 33	13	3	7		
14	19 39	27 49	20 2	28 21	20 23	28 53	20 45	29 25	21 8	29 58	21 30	30 30	21 52	31	2	22 14	31 34	15	3	8		
16	19 37	27 50	19 59	28 22	20 21	28 54	20 44	29 26	21 6	29 58	21 28	30 30	21 50	31	2	22 12	31 34	17	3	9		
18	19 35	27 50	19 57	28 22	20 19	28 54	20 42	29 26	21 4	29 58	21 26	30 30	21 48	31	3	22 10	31 35	19	3	10		
20	19 33	27 50	19 56	28 22	20 18	28 55	20 40	29 27	21 2	29 59	21 24	30 31	21 46	31	3	22 8	31 35	21	3	11		
22	19 32	27 51	19 54	28 23	20 16	28 55	20 38	29 27	21 0	29 59	21 22	30 31	21 44	31	4	22 7	31 36	23	3	12		
24	19 30	27 51	19 52	28 23	20 14	28 55	20 36	29 28	20 58	30	0	21 20	30 32	21 42	31	4	22 5	31 36	25	3	13	
26	19 28	27 51	19 50	28 24	20 12	28 56	20 34	29 28	20 56	30	0	21 19	30 32	21 41	31	4	22 3	31 36	27	3	14	
28	19 27	27 52	19 49	28 24	20 11	28 56	20 33	29 28	20 55	30	0	21 17	30 33	21 39	31	5	22 1	31 37	29	3	15	
30	19 25	27 52	19 47	28 24	20 9	28 57	20 31	29 29	20 53	30	1	21 15	30 33	21 37	31	5	21 59	31 37	31	3	16	
32	19 23	27 53	19 45	28 25	20 7	28 57	20 29	29 29	20 51	30	1	21 13	30 33	21 35	31	6	21 57	31 38	33	3	17	
34	19 21	27 53	19 43	28 25	20 5	28 57	20 27	29 30	20 49	30	2	21 11	30 34	21 33	31	6	21 55	31 38	35	3	18	
36	19 20	27 53	19 42	28 26	20 3	28 58	20 25	29 30	20 47	30	2	21 9	30 34	21 31	31	6	21 53	31 39	37	3	19	
38	19 18	27 54	19 40	28 26	20 2	28 58	20 24	29 30	20 45	30	2	21 7	30 35	21 29	31	7	21 51	31 39	39	3	20	
40	19 16	27 54	19 38	28 26	20 0	28 59	20 22	29 31	20 44	30	3	21 5	30 35	21 27	31	7	21 49	31 39	41	3	21	
42	19 15	27 55	19 36	28 27	19 58	28 59	20 20	29 31	20 42	30	3	21 4	30 36	21 25	31	8	21 47	31 40	43	3	22	
44	19 13	27 55	19 35	28 27	19 56	28 59	20 18	29 32	20 40	30	4	21 2	30 36	21 23	31	8	21 45	31 40	45	3	23	
46	19 11	27 55	19 33	28 28	19 55	29	0	20 16	29 32	20 38	30	4	21 0	30 36	21 22	31	9	21 43	31 41	47	3	24
48	19 9	27 56	19 31	28 28	19 53	29	0	20 15	29 32	20 36	30	5	20 58	30 37	21 20	31	9	21 41	31 41	49	3	25
50	19 8	27 56	19 29	28 28	19 51	29	1	20 13	29 33	20 34	30	5	20 56	30 37	21 18	31	9	21 39	31 42	51	3	26
52	19 6	27 57	19 28	28 29	19 49	29	1	20 11	29 33	20 32	30	5	20 54	30 38	21 16	31	10	21 37	31 42	53	3	27
54	19 4	27 57	19 26	28 29	19 47	29	1	20 9	29 34	20 31	30	6	20 52	30 38	21 14	31	10	21 35	31 43	55	3	28
56	19 3	27 57	19 24	28 30	19 46	29	2	20 7	29 34	20 29	30	6	20 50	30 39	21 12	31	11	21 33	31 43	57	3	29
58	19 1	27 58	19 22	28 30	19 44	29	2	20 5	29 34	20 27	30	7	20 48	30 39	21 10	31	11	21 32	31 43	59	3	30
60	18 59	27 58	19 21	28 30	19 42	29	3	20 4	29 35	20 25	30	7	20 47	30 39	21 8	31	12	21 30	31 44	61	3	31
2	18 57	27 58	19 19	28 31	19 40	29	3	20 2	29 35	20 23	30	7	20 45	30 40	21 6	31	12	21 28	31 44	63	3	32
4	18 56	27 59	19 17	28 31	19 38	29	3	20 0	29 36	20 21	30	8	20 43	30 40	21 4	31	12	21 26	31 45	65	3	33
6	18 54	27 59	19 15	28 32	19 37	29	4	19 58	29 36	20 20	30	8	20 41	30 41	21 2	31	13	21 24	31 45	67	3	34
8	18 52	28 0	19 14	28 32	19 35	29	4	19 56	29 36	20 18	30	9	20 39	30 41	21 0	31	13	21 22	31 46	69	3	35
10	18 50	28 0	19 12	28 32	19 33	29	5	19 54	29 37	20 16	30	9	20 37	30 41	20 58	31	14	21 20	31 46	71	3	36
12	18 49	28 0	19 10	28 33	19 31	29	5	19 53	29 37	20 14	30	9	20 35	30 42	20 57	31	14	21 18	31 46	73	3	37
14	18 47	28 1	19 8	28 33	19 29	29	5	19 51	29 38	20 12	30	10	20 33	30 42	20 55	31	15	21 16	31 47	75	3	38
16	18 45	28 1	19 7	28 33	19 28	29	6	19 49	29 38	20 10	30	10	20 31	30 43	20 53	31	15	21 14	31 47	77	3	39
18	18 44	28 1	19 5	28 34	19 26	29	6	19 47	29 38	20 8	30	11	20 30	30 43	20 51	31	15	21 12	31 48	79	3	40
20	18 42	28 2	19 3	28 34	19 24	29	6	19 45	29 39	20 6	30	11	20 28	30 43	20 49	31	16	21 10	31 48	81	3	41
22	18 40	28 2	19 1	28 34	19 22	29	7	19 43	29 39	20 5	30	11	20 26	30 44	20 47	31	16	21 8	31 49	83	3	42
24	18 38	28 3	18 59	28 35	19 21	29	7	19 42	29 40	20 3	30	12	20 24	30 44	20 45	31	17	21 6	31 49	85	3	43
26	18 37	28 3	18 58	28 35	19 19	29	8	19 40	29 40	20 1	30	12	20 22	30 45	20 43	31	17	21 4	31 49	87	3	44
28	18 35	28 3	18 56	28 36	19 17	29	8	19 38	29 40	19 59	30	13	20 20	30 45	20 41	31	17	21 2	31 50	89	3	45
30	18 33	28 4	18 54	28 36	19 15	29	8	19 36	29 41	19 57	30	13	20 18	30 45	20 39	31	18	21 0	31 50	91	3	46
32	18 31	28 4	18 52	28 36	19 13	29	9	19 34	29 41	19 55	30	13	20 16	30 46	20 37	31	18	20 58	31 51	93	3	47
34	18 30	28 4	18 51	28 37	19 12	29	9	19 33	29 42	19 53	30	14	20 14	30 46	20 35	31	19	20 56	31 51	95	3	48
36	18 28	28 5	18 49	28 37	19 10	29	10	19 31	29 42	19 52	30	14	20 13	30 47	20 33	31	19	20 54	31 51	97	3	49
38	18 26	28 5	18 47	28 38	19 8	29	10	19 29	29 42	19 50	30	15	20 11	30 47	20 32	31	19	20 52	31 52	99	3	50
40	18 24	28 5	18 45	28 38	19 6	29	10	19 27	29 43	19 48	30	15	20 9	30 47	20 30	31	20	20 50	31 52	101	3	51
42	18 23	28 6	18 44	28 38	19 4	29	11	19 25	29 43	19 46	30	15	20 7	30 48	20 28	31	20	20 49	31 53	103	3	52
44	18 21	28 6	18 42	28 39	19 3	29	11	19 23	29 43	19 44	30	16	20 5	30 48	20 26	31	21	20 47	31 53	105	3	53
46	18 19	28 7	18 40	28 39	19 1	29	11	19 22	29 44	19 42	30	16	20 3	30 49	20 24	31	21	20 45	31 54	107	3	54
48	18 18	28 7	18 38	28 39	18 59	29	12	19 20	29 44	19 40	30	17	20 1	30 49	20 22	31	22	20 43	31 54	109	3	55
50	18 16	28 7	18 37	28 40	18 57	29	12	19 18	29 45	19 39	30	17	19 59	30 50	20 20	31	22	20 41	31 54	111	3	56
52	18 14	28 8	18 35	28 40	18 55	29	13	19 16	29 45	19 37	30	17	19 57	30 50	20 18	31	22	20 39	31 55	113	3	57
54	18 12	28 8	18 33	28 41	18 54	29	13	19 14	29 45	19 35	30	18	19 55	30 50	20 16	31	23	20 37	31 55	115	3	58
56	18 11	28 9	18 31	28 41	18 52	29	13	19 12	29 46	19 33	30	18	19 54	30								

and 71°) The Correction of the Moon's Altitude, and the Aux. Angle A. (w.)

Minutes of Moon's Hor. Parallax.														Seconds of H. P.		
54'		55'		56'		57'		58'		59'		60'		61'		
Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	Corr.	A	
+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	+	60"	
1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	
8 7 23 9	18 28 28 42	18 48 29 14	19 9 29 47	19 29 30 19	19 50 30 52	20 10 31 24	20 31 31 56	2 1 1								
8 5 23 10	18 26 28 42	18 46 29 15	19 7 29 47	19 27 30 19	19 48 30 52	20 8 31 24	20 29 31 57	3 1 2								
8 4 23 10	18 24 28 43	18 45 29 15	19 6 29 47	19 26 30 20	19 46 30 52	20 7 31 25	20 27 31 57	4 1 2								
8 2 28 10	18 22 28 43	18 43 29 15	19 3 29 48	19 24 30 20	19 44 30 53	20 5 31 25	20 25 31 58	5 2 3								
8 0 28 11	18 21 28 43	18 41 29 16	19 1 29 48	19 22 30 21	19 42 30 53	20 3 31 26	20 23 31 58	6 2 3								
7 58 28 11	18 19 28 44	18 39 29 16	19 0 29 49	19 20 30 21	19 40 30 54	20 1 31 26	20 21 31 59	7 2 4								
7 57 28 11	18 17 28 44	18 37 29 16	18 58 29 49	19 18 30 21	19 38 30 54	19 59 31 26	20 19 31 59	8 3 4								
7 55 28 12	18 15 28 44	18 36 29 17	18 56 29 49	19 16 30 22	19 36 30 54	19 57 31 27	20 17 31 59	9 3 5								
7 53 28 12	18 14 28 45	18 34 29 17	18 54 29 50	19 14 30 22	19 35 30 55	19 55 31 27	20 15 32 0	10 3 5								
7 52 28 13	18 12 28 45	18 32 29 18	18 52 29 50	19 12 30 23	19 33 30 55	19 53 31 28	20 13 32 0	11 4 6								
7 50 28 13	18 10 28 45	18 30 29 18	18 50 29 50	19 11 30 23	19 31 30 55	19 51 31 28	20 11 32 1	12 4 7								
7 48 28 13	18 8 28 46	18 28 29 18	18 49 29 51	19 9 30 23	19 29 30 56	19 49 31 29	20 9 32 1	13 4 7								
7 46 28 14	18 6 28 46	18 27 29 19	18 47 29 51	19 7 30 24	19 27 30 56	19 47 31 29	20 7 32 1	14 4 7								
7 45 28 14	18 5 28 47	18 25 29 19	18 45 29 52	19 5 30 24	19 25 30 57	19 45 31 29	20 5 32 2	15 4 8								
7 43 28 14	18 3 28 47	18 23 29 19	18 43 29 52	19 3 30 25	19 23 30 57	19 43 31 30	20 3 32 2	16 4 8								
7 41 28 15	18 1 28 47	18 21 29 20	18 41 29 52	19 1 30 25	19 21 30 58	19 41 31 30	20 1 32 3	17 4 9								
7 39 28 15	17 59 28 48	18 19 29 20	18 39 29 53	18 59 30 25	19 19 30 58	19 39 31 31	19 59 32 3	18 4 9								
7 38 28 15	17 58 28 48	18 18 29 21	18 38 29 53	18 58 30 26	19 18 30 58	19 37 31 31	19 58 32 4	19 4 10								
7 36 28 16	17 56 28 48	18 16 29 21	18 36 29 54	18 56 30 26	19 16 30 59	19 36 31 31	19 56 32 4	20 4 10								
7 34 28 16	17 54 28 49	18 14 29 21	18 34 29 54	18 54 30 27	19 14 30 59	19 34 31 32	19 54 32 4	21 4 11								
7 32 28 17	17 52 28 49	18 12 29 22	18 32 29 54	18 52 30 27	19 12 31 0	19 32 31 32	19 52 32 5	22 4 11								
7 31 28 17	17 51 28 50	18 10 29 22	18 30 29 55	18 50 30 27	19 10 31 0	19 30 31 33	19 50 32 5	23 4 11								
7 29 28 17	17 49 28 50	18 9 29 23	18 28 29 55	18 48 30 28	19 8 31 0	19 28 31 33	19 48 32 5	24 4 12								
7 27 28 17	17 47 28 50	18 7 29 23	18 27 29 56	18 46 30 28	19 6 31 1	19 26 31 33	19 46 32 6	25 4 12								
7 26 28 18	17 45 28 51	18 5 29 23	18 25 29 56	18 45 30 29	19 4 31 1	19 24 31 34	19 44 32 6	26 4 13								
7 24 28 18	17 44 28 51	18 3 29 24	18 23 29 56	18 43 30 29	19 2 31 2	19 22 31 34	19 42 32 6	27 4 13								
7 22 28 19	17 42 28 51	18 1 29 24	18 21 29 57	18 41 30 29	19 0 31 2	19 20 31 35	19 40 32 7	28 4 14								
7 20 28 19	17 40 28 52	18 0 29 24	18 19 29 57	18 39 30 30	18 59 31	19 18 31 35	19 38 32 7	29 4 14								
7 19 28 19	17 38 28 52	17 58 29 25	18 17 29 57	18 37 30 30	18 57 31	19 16 31 35	19 36 32 8	30 4 15								
7 17 28 20	17 36 28 53	17 56 29 25	18 16 29 58	18 35 30 31	18 55 31	19 14 31 36	19 34 32 8	31 4 15								
7 15 28 20	17 35 28 53	17 54 29 25	18 14 29 58	18 33 30 31	18 53 31	19 12 31 36	19 32 32 9	32 4 16								
7 13 28 21	17 33 28 53	17 52 29 26	18 12 29 59	18 32 30 31	18 51 31	19 11 31 37	19 30 32 9	33 4 16								
7 12 28 21	17 31 28 54	17 51 29 26	18 10 29 59	18 30 30 32	18 49 31	19 9 31 37	19 28 32 10	34 4 17								
7 10 28 21	17 29 28 54	17 49 29 27	18 8 29 59	18 28 30 32	18 47 31	19 7 31 37	19 26 32 10	35 4 17								
7 8 28 22	17 28 28 54	17 47 29 27	18 6 30 0	18 26 30 32	18 45 31	19 5 31 38	19 24 32 10	36 4 18								
7 6 28 22	17 26 28 55	17 45 29 27	18 5 30 0	18 24 30 33	18 43 31	19 3 31 38	19 22 32 11	37 4 18								
7 5 28 22	17 24 28 55	17 43 29 28	18 3 30 0	18 22 30 33	18 41 31	19 1 31 38	19 20 32 11	38 4 19								
7 3 28 23	17 22 28 55	17 42 29 28	18 1 30 1	18 20 30 33	18 39 31	18 59 31 39	19 18 32 12	39 4 19								
7 1 28 23	17 20 28 56	17 40 29 28	17 59 30 1	18 18 30 34	18 38 31	18 57 31 39	19 16 32 12	40 4 20								
5 59 28 23	17 19 28 56	17 38 29 29	17 57 30 1	18 16 30 34	18 36 31	18 55 31 39	19 14 32 12	41 4 20								
5 58 28 24	17 17 28 56	17 36 29 29	17 55 30 2	18 14 30 34	18 34 31	18 53 31 40	19 12 32 13	42 4 21								
5 56 28 24	17 15 28 57	17 34 29 29	17 53 30 2	18 13 30 35	18 32 31	18 51 31 40	19 10 32 13	43 4 21								
5 54 28 24	17 13 28 57	17 32 29 30	17 52 30 2	18 11 30 35	18 30 31	18 49 31 41	19 8 32 13	44 4 22								
5 52 28 25	17 12 28 57	17 31 29 30	17 50 30 3	18 9 30 36	18 28 31	18 47 31 41	19 6 32 14	45 4 22								
5 51 28 25	17 10 28 58	17 29 29 30	17 48 30 3	18 7 30 36	18 26 31	18 45 31 41	19 4 32 14	46 4 23								
4 49 28 25	17 8 28 58	17 27 29 31	17 46 30 4	18 5 30 36	18 24 31	18 43 31 42	19 2 32 15	47 4 23								
4 47 28 26	17 6 28 58	17 25 29 31	17 44 30 4	18 3 30 37	18 22 31	18 41 31 42	19 0 32 15	48 4 24								
4 45 28 26	17 4 28 59	17 23 29 32	17 42 30 4	18 1 30 37	18 20 31	18 39 31 43	18 58 32 15	49 4 24								
4 44 28 26	17 3 28 59	17 22 29 32	17 40 30 5	17 59 30 37	18 18 31	18 37 31 43	18 56 32 16	50 4 25								
4 42 28 27	17 1 28 59	17 20 29 32	17 39 30 5	17 58 30 38	18 17 31	18 35 31 43	18 54 32 16	51 4 25								
4 40 28 27	16 59 29 0	17 18 29 33	17 37 30 5	17 56 30 38	18 15 31	18 33 31 44	18 52 32 16	52 4 26								
3 38 28 27	16 57 29 0	17 16 29 33	17 35 30 6	17 54 30 38	18 13 31	18 31 31 44	18 50 32 17	53 4 26								
3 37 28 28	16 55 29 0	17 14 29 33	17 33 30 6	17 52 30 39	18 11 31	18 29 31 44	18 48 32 17	54 4 27								
3 35 28 28	16 54 29 1	17 12 29 34	17 31 30 7	17 50 30 39	18 9 31	18 27 31 45	18 46 32 18	55 4 27								
3 33 28 28	16 52 29 1	17 11 29 34	17 29 30 7	17 48 30 40	18 7 31	18 26 31 45	18 44 32 18	56 4 28								
3 31 28 29	16 50 29 1	17 9 29 34	17 28 30 7	17 46 30 40	18 5 31	18 24 31 46	18 42 32 18	57 4 28								
3 30 28 29	16 48 29 2	17 7 29 35	17 26 30 8	17 44 30 40	18 3 31	18 22 31 46	18 40 32 19	58 4 29								
2 28 28 29	16 47 29 2	17 5 29 35	17 24 30 8	17 43 30 41	18 1 31	18 20 31 46	18 38 32 19	59 4 29								
2 26 28 30	16 45 29 3	17 3 29 35	17 22 30 8	17 41 30 41	17 59 31	18 18 31 47	18 36 32 20	60 4 30								
2 24 28 30	16 43 29 3	17 2 29 36	17 20 30 9	17 39 30 41	17 57 31	18 16 31 47	18 34 32 20	61 4 30								

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (72°)

App. Alt.	Minutes of Moon's Hor. Parallax.													
	54'		55'		56'		57'		58'		59'		60'	
72°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°
0'	16 23 28 30	16 41 29	3 17 0	29 36	17 18 30	9 17 37	30 42	17 55 31	15 18 14	31 47	18 32 3			
2	16 21 28 31	16 39 29	4 16 58	29 36	17 16 30	9 17 35	30 42	17 53 31	15 18 12	31 48	18 30 3			
4	16 19 28 31	16 38 29	4 16 56	29 37	17 15 30	10 17 33	30 42	17 52 31	15 18 10	31 48	18 28 3			
6	16 17 28 31	16 36 29	4 16 54	29 37	17 13 30	10 17 31	30 43	17 50 31	16 18 8	31 49	18 26 3			
8	16 16 28 32	16 34 29	5 16 52	29 37	17 11 30	10 17 29	30 43	17 48 31	16 18 6	31 49	18 24 3			
10	16 14 28 32	16 32 29	5 16 51	29 38	17 9 30	11 17 27	30 43	17 46 31	16 18 4	31 49	18 22 3			
12	16 12 28 32	16 30 29	5 16 49	29 38	17 7 30	11 17 25	30 44	17 44 31	17 18 2	31 50	18 20 3			
14	16 10 28 33	16 29 29	6 16 47	29 38	17 5 30	11 17 24	30 44	17 42 31	17 18 0	31 50	18 18 3			
16	16 9 28 33	16 27 29	6 16 45	29 39	17 3 30	12 17 22	30 45	17 40 31	17 17 58	31 50	18 16 3			
18	16 7 28 33	16 25 29	6 16 43	29 39	17 2 30	12 17 20	30 45	17 38 31	18 17 56	31 51	18 14 3			
20	16 5 28 34	16 23 29	6 16 41	29 39	17 0 30	12 17 18	30 45	17 36 31	18 17 54	31 51	18 12 3			
22	16 3 28 34	16 21 29	7 16 40	29 40	16 58 30	13 17 16	30 46	17 34 31	18 17 52	31 51	18 11 3			
24	16 2 28 34	16 20 29	7 16 38	29 40	16 56 30	13 17 14	30 46	17 32 31	19 17 50	31 52	18 9 3			
26	16 0 28 35	16 18 29	7 16 36	29 41	16 54 30	13 17 12	30 46	17 30 31	19 17 48	31 52	18 7 3			
28	15 58 28 35	16 16 29	8 16 34	29 41	16 52 30	14 17 10	30 47	17 28 31	19 17 46	31 52	18 5 3			
30	15 56 28 35	16 14 29	8 16 32	29 41	16 50 30	14 17 8	30 47	17 26 31	20 17 44	31 53	18 3 3			
32	15 54 28 35	16 12 29	8 16 31	29 42	16 49 30	14 17 6	30 47	17 25 31	20 17 43	31 53	18 1 3			
34	15 53 28 36	16 11 29	9 16 29	29 42	16 47 30	15 17 5	30 48	17 23 31	21 17 41	31 53	17 59 3			
36	15 51 28 36	16 9 29	9 16 27	29 42	16 45 30	15 17 3	30 48	17 21 31	21 17 39	31 54	17 57 3			
38	15 49 28 36	16 7 29	9 16 25	29 43	16 43 30	15 17 1	30 49	17 19 31	21 17 37	31 54	17 55 3			
40	15 47 28 37	16 5 29	10 16 23	29 43	16 41 30	16 16 59	30 49	17 17 31	22 17 35	31 54	17 53 3			
42	15 46 28 37	16 4 29	10 16 21	29 43	16 39 30	16 16 57	30 49	17 14 31	22 17 33	31 55	17 51 3			
44	15 44 28 37	16 2 29	10 16 20	29 43	16 37 30	16 16 55	30 49	17 12 31	22 17 31	31 55	17 49 3			
46	15 42 28 38	16 0 29	11 16 18	29 44	16 36 30	17 16 53	30 50	17 10 31	23 17 29	31 56	17 47 3			
48	15 40 28 38	15 58 29	11 16 16	29 44	16 34 30	17 16 51	30 50	17 9 31	23 17 27	31 56	17 45 3			
50	15 39 28 38	15 56 29	11 16 14	29 44	16 32 30	17 16 49	30 50	17 7 31	23 17 25	31 56	17 43 3			
52	15 37 28 39	15 55 29	12 16 12	29 45	16 30 30	18 16 48	30 51	17 5 31	24 17 23	31 57	17 41 3			
54	15 35 28 39	15 53 29	12 16 10	29 45	16 28 30	18 16 46	30 51	17 3 31	24 17 21	31 57	17 39 3			
56	15 33 28 39	15 51 29	12 16 9	29 45	16 26 30	18 16 44	30 51	17 1 31	24 17 19	31 57	17 37 3			
58	15 32 28 40	15 49 29	13 16 7	29 46	16 24 30	19 16 42	30 52	16 59 31	25 17 17	31 58	17 35 3			
73°	54'	55'	56'	57'	58'	59'	60'	61'						
0'	15 30 28 40	15 47 29	13 16 5 29 46	16 22 30 19	16 40 30 52	16 57 31 25	17 15 31 58	17 33 32						
2	15 28 28 40	15 46 29	13 16 3 29 46	16 21 30 19	16 38 30 52	16 56 31 25	17 13 31 59	17 31 32						
4	15 26 28 40	15 44 29	14 16 1 29 47	16 19 30 20	16 36 30 53	16 54 31 26	17 11 31 59	17 29 32						
6	15 24 28 41	15 42 29	14 15 59 29 47	16 17 30 20	16 34 30 53	16 52 31 26	17 9 31 59	17 27 32						
8	15 23 28 41	15 40 29	14 15 58 29 47	16 15 30 20	16 32 30 53	16 50 31 26	17 7 32 0	17 25 32						
10	15 21 28 41	15 38 29	14 15 56 29 48	16 13 30 21	16 30 30 54	16 48 31 27	17 5 32 0	17 23 32						
12	15 19 28 42	15 37 29	15 15 54 29 48	16 11 30 21	16 29 30 54	16 46 31 27	17 3 32 0	17 21 32						
14	15 17 28 42	15 35 29	15 15 52 29 48	16 9 30 21	16 27 30 54	16 44 31 27	17 1 32 1	17 19 32						
16	15 16 28 42	15 33 29	15 15 50 29 48	16 7 30 22	16 25 30 55	16 42 31 28	16 59 32	1 17 17 32						
18	15 14 28 43	15 31 29	16 15 48 29 49	16 6 30 22	16 23 30 55	16 40 31 28	16 57 32	1 17 15 32						
20	15 12 28 43	15 29 29	16 15 46 29 49	16 4 30 22	16 21 30 55	16 38 31 28	16 55 32	1 17 13 32						
22	15 10 28 43	15 27 29	16 15 45 29 49	16 2 30 23	16 19 30 56	16 36 31 29	16 53 32	2 17 11 32						
24	15 9 28 44	15 26 29	17 15 43 29 50	16 0 30 23	16 17 30 56	16 34 31 29	16 51 32	2 17 9 32						
26	15 7 28 44	15 24 29	17 15 41 29 50	15 58 30 23	16 15 30 56	16 32 31 29	16 49 32	3 17 7 32						
28	15 5 28 44	15 22 29	17 15 39 29 50	15 56 30 24	16 13 30 57	16 30 31 30	16 47 32	3 17 5 32						
30	15 3 28 44	15 20 29	17 15 37 29 51	15 54 30 24	16 11 30 57	16 28 31 30	16 45 32	3 17 3 32						
32	15 1 28 45	15 18 29	18 15 36 29 51	15 53 30 24	16 9 30 57	16 27 31 31	16 44 32	4 17 1 32						
34	15 0 28 45	15 17 29	18 15 34 29 51	15 51 30 25	16 8 30 58	16 25 31 31	16 42 32	4 16 59 32						
36	14 58 28 45	15 15 29	19 15 32 29 52	15 48 30 25	16 6 30 58	16 23 31 31	16 40 32	4 16 57 32						
38	14 56 28 46	15 13 29	19 15 30 29 52	15 47 30 25	16 4 30 58	16 21 31 31	16 38 32	5 16 55 32						
40	14 54 28 46	15 11 29	19 15 28 29 52	15 45 30 25	16 2 30 59	16 19 31 32	16 36 32	5 16 53 32						
42	14 53 28 46	15 9 29	19 15 26 29 53	15 43 30 26	16 0 30 59	16 17 31 32	16 34 32	5 16 51 32						
44	14 51 28 47	15 8 29	20 15 25 29 53	15 41 30 26	15 58 30 59	16 15 31 32	16 32 32	6 16 49 32						
46	14 49 28 47	15 6 29	20 15 23 29 53	15 39 30 26	15 56 31 0	16 13 31 33	16 30 32	6 16 47 32						
48	14 47 28 47	15 4 29	20 15 21 29 54	15 38 30 27	15 54 31 0	16 11 31 33	16 28 32	6 16 45 32						
50	14 46 28 47	15 2 29	21 15 19 29 54	15 36 30 27	15 52 31 0	16 9 31 33	16 26 32	7 16 43 32						
52	14 44 28 48	15 0 29	21 15 17 29 54	15 34 30 27	15 50 31 1	16 7 31 34	16 24 32	7 16 41 32						
54	14 42 28 48	14 59 29	21 15 15 29 54	15 32 30 28	15 49 31 1	16 5 31 34	16 22 32	7 16 39 32						
56	14 40 28 48	14 57 29	22 15 13 29 55	15 30 30 28	15 47 31 1	16 3 31 34	16 20 32	8 16 37 32						
58	14 38 28 49	14 55 29	22 15 12 29 55	15 28 30 28	15 45 31 1	16 1 31 35	16 18 32	8 16 35 32						

(74° and 75°) The Correction of the Moon's Altitude, and the Aux. Angle A. (w.)

P. L.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.		
	54'	55'	56'	57'	58'	59'	60'	61'	Corr.		A		Corr.		A		"	"	"
	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	1	0	1
14 37	28 49	14 53	29 22	15 10	29 55	15 26	30 29	15 43	31	2 15 59	31 35	16 16	32	8 16 32	32 41	3	1	2	
14 35	28 49	14 51	29 22	15 8	29 56	15 24	30 29	15 41	31	2 15 57	31 35	16 14	32	9 16 30	32 42	4	1	2	
14 33	28 50	14 50	29 23	15 6	29 56	15 23	30 29	15 39	31	2 15 55	31 36	16 12	32	9 16 28	32 42	5	1	3	
14 31	28 50	14 48	29 23	15 4	29 56	15 21	30 30	15 37	31	3 15 54	31 36	16 10	32	9 16 26	32 42	6	2	3	
14 30	28 50	14 46	29 23	15 2	29 57	15 19	30 30	15 35	31	3 15 52	31 36	16 8	32	9 16 24	32 43	7	2	4	
14 28	28 50	14 44	29 24	15 1	29 57	15 17	30 30	15 33	31	3 15 50	31 37	16 6	32	10 16 22	32 43	8	2	4	
14 26	28 51	14 42	29 24	14 59	29 57	15 15	30 30	15 31	31	4 15 48	31 37	16 4	32	10 16 20	32 43	9	3	6	
14 24	28 51	14 41	29 24	14 57	29 57	15 13	30 31	15 29	31	4 15 46	31 37	16 2	32	10 16 18	32 44	11	3	6	
14 22	28 51	14 39	29 25	14 55	29 58	15 11	30 31	15 28	31	4 15 44	31 38	16 0	32	11 16 16	32 44	12	3	7	
14 21	28 52	14 37	29 25	14 53	29 58	15 9	30 31	15 26	31	5 15 42	31 38	15 58	32	11 16 14	32 44	14	4	8	
14 19	28 52	14 35	29 25	14 51	29 58	15 7	30 32	15 24	31	5 15 40	31 38	15 56	32	11 16 12	32 45	15	4	8	
14 17	28 52	14 33	29 25	14 49	29 59	15 6	30 32	15 22	31	5 15 38	31 39	15 54	32	12 16 10	32 45	16	4	9	
14 15	28 52	14 31	29 26	14 48	29 59	15 4	30 32	15 20	31	6 15 36	31 39	15 52	32	12 16 8	32 45	17	4	9	
14 14	28 53	14 30	29 26	14 46	29 59	15 2	30 33	15 18	31	6 15 34	31 39	15 50	32	12 16 6	32 46	18	5	10	
14 12	28 53	14 28	29 26	14 44	30 0	15 0	30 33	15 16	31	6 15 32	31 39	15 48	32	13 16 4	32 46	19	5	11	
14 10	28 53	14 26	29 27	14 42	30 0	14 58	30 33	15 14	31	6 15 30	31 40	15 46	32	13 16 2	32 46	21	6	12	
14 8	28 54	14 24	29 27	14 40	30 0	14 56	30 33	15 12	31	7 15 28	31 40	15 44	32	13 16 0	32 47	22	6	12	
14 6	28 54	14 22	29 27	14 38	30 0	14 54	30 34	15 10	31	7 15 26	31 40	15 42	32	14 15 58	32 47	23	6	13	
14 4	28 54	14 21	29 28	14 36	30 0	14 52	30 34	15 8	31	7 15 24	31 41	15 40	32	14 15 56	32 47	24	6	13	
14 3	28 55	14 19	29 28	14 35	30 0	14 51	30 34	15 7	31	8 15 22	31 41	15 38	32	14 15 54	32 48	25	6	14	
14 1	28 55	14 17	29 28	14 33	30 0	14 49	30 35	15 5	31	8 15 20	31 41	15 36	32	15 15 52	32 48	26	7	15	
13 59	28 55	14 15	29 28	14 31	30 0	14 47	30 35	15 3	31	8 15 19	31 42	15 34	32	15 15 50	32 48	27	7	15	
13 58	28 55	14 13	29 29	14 29	30 0	14 45	30 35	15 1	31	9 15 17	31 42	15 32	32	15 15 48	32 49	28	7	16	
13 56	28 56	14 12	29 29	14 27	30 0	14 43	30 36	14 59	31	9 15 15	31 42	15 30	32	16 15 46	32 49	29	7	16	
13 54	28 56	14 10	29 29	14 25	30 0	14 41	30 36	14 57	31	9 15 13	31 43	15 28	32	16 15 44	32 49	30	8	17	
13 52	28 56	14 8	29 30	14 24	30 0	14 39	30 36	14 55	31	10 15 11	31 43	15 26	32	16 15 42	32 49	31	8	18	
13 50	28 57	14 6	29 30	14 22	30 0	14 37	30 36	14 53	31	10 15 9	31 43	15 24	32	17 15 40	32 50	32	9	19	
13 49	28 57	14 4	29 30	14 20	30 0	14 36	30 37	14 51	31	10 15 7	31 43	15 22	32	17 15 38	32 50	33	9	20	
13 47	28 57	14 2	29 30	14 18	30 0	14 34	30 37	14 49	31	10 15 5	31 44	15 20	32	17 15 36	32 50	34	10	21	
13 45	28 57	14 1	29 31	14 16	30 0	14 32	30 37	14 47	31	11 15 3	31 44	15 18	32	17 15 34	32 51	35	10	22	
75°	54'	55'	56'	57'	58'	59'	60'	61'											
0	13 43	28 58	13 59	29 31	14 14	30 4	14 30	30 38	14 45	31 11	15 1	13 44	15 16	32 18	15 32	32 51	40	10	22
2	13 41	28 58	13 57	29 31	14 13	30 5	14 28	30 38	14 43	31 11	14 59	31 45	15 14	32 18	15 30	32 51	41	11	23
4	13 39	28 58	13 55	29 32	14 11	30 5	14 26	30 38	14 42	31 12	14 57	31 45	15 12	32 18	15 28	32 52	42	11	24
6	13 38	28 59	13 53	29 32	14 9	30 5	14 24	30 39	14 40	31 12	14 55	31 45	15 10	32 19	15 26	32 52	43	11	25
8	13 36	28 59	13 52	29 32	14 7	30 6	14 22	30 39	14 38	31 12	14 53	31 46	15 8	32 19	15 24	32 52	44	12	26
10	13 34	28 59	13 50	29 32	14 5	30 6	14 20	30 39	14 36	31 12	14 51	31 46	15 6	32 19	15 22	32 53	45	12	27
12	13 33	28 59	13 48	29 33	14 3	30 6	14 19	30 39	14 34	31 13	14 49	31 46	15 4	32 20	15 20	32 53	46	12	27
14	13 31	29 0	13 46	29 33	14 1	30 6	14 17	30 40	14 32	31 13	14 47	31 46	15 2	32 20	15 18	32 53	47	12	27
16	13 29	29 0	13 44	29 33	14 0	30 7	14 15	30 40	14 30	31 13	14 45	31 47	15 0	32 20	15 16	32 53	48	12	27
18	13 27	29 0	13 42	29 34	13 58	30 7	14 13	30 40	14 28	31 14	14 43	31 47	14 58	32 20	15 14	32 54	49	13	28
20	13 25	29 0	13 41	29 34	13 56	30 7	14 11	30 41	14 26	31 14	14 41	31 47	14 56	32 21	15 12	32 54	50	13	28
22	13 24	29 0	13 39	29 34	13 54	30 7	14 9	30 41	14 24	31 14	14 39	31 48	14 55	32 21	15 10	32 54	51	13	28
24	13 22	29 1	13 37	29 34	13 52	30 8	14 7	30 41	14 22	31 14	14 38	31 48	14 53	32 21	15 8	32 55	52	13	29
26	13 20	29 1	13 35	29 35	13 50	30 8	14 5	30 41	14 21	31 15	14 36	31 48	14 51	32 22	15 6	32 55	53	14	30
28	13 18	29 1	13 33	29 35	13 48	30 8	14 3	30 42	14 19	31 15	14 34	31 48	14 49	32 22	15 4	32 55	54	14	30
30	13 16	29 2	13 31	29 35	13 46	30 9	14 1	30 42	14 17	31 15	14 32	31 49	14 47	32 22	15 2	32 56	55	14	31
32	13 15	29 2	13 30	29 35	13 45	30 9	14 0	30 42	14 15	31 16	14 30	31 49	14 45	32 22	15 0	32 56	56	14	31
34	13 13	29 2	13 28	29 36	13 43	30 9	13 58	30 43	14 13	31 16	14 28	31 49	14 43	32 23	14 58	32 56	57	15	32
36	13 11	29 2	13 26	29 36	13 41	30 9	13 56	30 43	14 12	31 16	14 26	31 50	14 41	32 23	14 56	32 57	58	15	32
38	13 9	29 3	13 24	29 36	13 39	30 10	13 54	30 43	14 10	31 17	14 25	31 50	14 39	32 23	14 54	32 57	59	15	32
40	13 7	29 3	13 22	29 36	13 37	30 10	13 52	30 43	14 8	31 17	14 23	31 50	14 38	32 24	14 51	32 57	60	15	33
42	13 6	29 3	13 21	29 37	13 35	30 10	13 50	30 44	14 6	31 17	14 21	31 51	14 36	32 24	14 49	32 57	61	15	33
44	13 4	29 4	13 19	29 37	13 33	30 10	13 48	30 44	14 4	31 17	14 19	31 51	14 33	32 24	14 47	32 58	62	15	33
46	13 2	29 4	13 17	29 37	13 32	30 11	13 46	30 44	14 2	31 18	14 17	31 51	14 31	32 25	14 45	32 58	63	15	33
48	13 0	29 4	13 15	29 38	13 30	30 11	13 45	30 45	14 0	31 18	14 15	31 51	14 29	32 25	14 43	32 58	64	15	33
50	12 59	29 4	13 13	29 38	13 28	30 11	13 43	30 45	13 58	31 18	14 12	31 52	14 27	32 25	14 41	32 59	65	15	33
52	12 57	29 5	13 11	29 38	13 26	30 12	13 41	30 45	13 56	31 19	14 10	31 52	14 25	32 25	14 39	32 59	66	15	33
54	12 55	29 5	13 10	29 38	13 24	30 12	13 39	30 45	13 54	31 19	14 8	8 31 52	14 23	32 26	14 37	32 59	67	15	33
56	12 53	29 5	13 8	29 39	13 22	30 12	13 37	30 46	13 52	31 19	14 6	6 31 53	14 21	32 26	14 35	33 0	68	15	33
58	12 51	29 5	13 6	29 39	13 21	30 12	13 35	30 46	13 50	31 19	14 4	4 31 53	14 19	32 26	14 33	33 0	69	15	33

(78° and 79°)		The Correction of the Moon's Altitude, and the Aux. Angle A																(w.)	
App. Alt.	Minutes of Moon's Hor. Parallax.																Seconds of H. P.		
	54'		55'		56'		57'		58'		59'		60'		61'		"	"	
78°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	"	"	
0'	1	129 20	11	14 29 54	11	26 30 28	11	39 31	1	11 51 31 35	12	4 32	9	12 16 32 43	12	29 33 16	1	0 1	
2	1	0 29 20	11	12 29 54	11	25 30 28	11	37 31	2	11 49 31 35	12	2 32	9	12 14 32 43	12	27 33 17	1	1 2	
4	1	0 58 29 20	11	10 29 54	11	23 30 28	11	35 31	2	11 48 31 36	12	0 32	9	12 12 32 43	12	25 33 17	1	1 3	
6	1	0 56 29 21	11	8 29 54	11	21 30 28	11	33 31	2	11 46 31 36	11	58 32	10	12 10 32 43	12	23 33 17	1	1 3	
8	1	0 54 29 21	11	7 29 55	11	19 30 28	11	31 31	2	11 44 31 36	11	56 32	10	12 8 32 44	12	21 33 17	1	1 4	
10	1	0 52 29 21	11	5 29 55	11	17 30 29	11	29 31	2	11 42 31 36	11	54 32	10	12 6 32 44	12	19 33 18	1	2 4	
12	1	0 51 29 21	11	3 29 55	11	15 30 29	11	27 31	3	11 40 31 36	11	52 32	10	12 4 32 44	12	17 33 18	1	2 6	
14	1	0 49 29 22	11	1 29 55	11	13 30 29	11	26 31	3	11 38 31 37	11	50 32	11	12 2 32 44	12	15 33 18	1	2 6	
16	1	0 47 29 22	10	59 29 56	11	11 30 29	11	24 31	3	11 36 31 37	11	48 32	11	12 0 32 45	12	13 33 18	1	2 7	
18	1	0 45 29 22	10	57 29 56	11	10 30 30	11	22 31	3	11 34 31 37	11	46 32	11	11 58 32 45	12	10 33 19	1	2 7	
20	1	0 43 29 22	10	55 29 56	11	8 30 30	11	20 31	4	11 32 31 37	11	44 32	11	11 56 32 45	12	8 33 19	1	3 8	
22	1	0 42 29 22	10	54 29 56	11	6 30 30	11	18 31	4	11 30 31 38	11	42 32	11	11 54 32 45	12	6 33 19	1	3 8	
24	1	0 40 29 23	10	52 29 56	11	4 30 30	11	16 31	4	11 28 31 38	11	40 32	12	11 52 32 45	12	4 33 19	1	3 9	
26	1	0 38 29 23	10	50 29 57	11	2 30 30	11	14 31	4	11 26 31 38	11	38 32	12	11 50 32 46	12	2 33 20	1	3 10	
28	1	0 36 29 23	10	48 29 57	11	0 30 31	11	12 31	5	11 24 31 38	11	36 32	12	11 48 32 46	12	0 33 20	1	4 11	
30	1	0 34 29 23	10	46 29 57	10	58 30 31	11	10 31	5	11 22 31 39	11	34 32	12	11 46 32 46	11	58 33 20	1	4 12	
32	1	0 33 29 24	10	44 29 57	10	56 30 31	11	8 31	5	11 20 31 39	11	32 32	13	11 44 32 46	11	56 33 20	1	4 12	
34	1	0 31 29 24	10	43 29 58	10	55 30 31	11	6 31	5	11 18 31 39	11	30 32	13	11 42 32 47	11	54 33 21	1	4 13	
36	1	0 29 29 24	10	41 29 58	10	53 30 32	11	5 31	5	11 16 31 39	11	28 32	13	11 40 32 47	11	52 33 21	1	5 13	
38	1	0 27 29 24	10	39 29 58	10	51 30 32	11	3 31	6	11 14 31 40	11	26 32	13	11 38 32 47	11	50 33 21	1	5 14	
40	1	0 25 29 24	10	37 29 58	10	49 30 32	11	1 31	6	11 12 31 40	11	24 32	14	11 36 32 47	11	48 33 21	1	5 15	
42	1	0 23 29 25	10	35 29 58	10	47 30 32	10	59 31	6	11 11 31 40	11	22 32	14	11 34 32 48	11	46 33 22	1	5 16	
44	1	0 22 29 25	10	33 29 59	10	45 30 33	10	57 31	6	11 9 31 40	11	20 32	14	11 32 32 48	11	44 33 22	1	6 16	
46	1	0 20 29 25	10	32 29 59	10	43 30 33	10	55 31	7	11 7 31 40	11	18 32	14	11 30 32 48	11	42 33 22	1	6 17	
48	1	0 18 29 25	10	30 29 59	10	41 30 33	10	53 31	7	11 5 31 41	11	16 32	15	11 28 32 48	11	40 33 22	1	6 18	
50	1	0 16 29 25	10	28 29 59	10	39 30 33	10	51 31	7	11 3 31 41	11	14 32	15	11 26 32 49	11	38 33 23	1	6 18	
52	1	0 14 29 26	10	26 30 0	10	38 30 33	10	49 31	7	11 1 31 41	11	12 32	15	11 24 32 49	11	36 33 23	1	7 19	
54	1	0 13 29 26	10	24 30 0	10	36 30 34	10	47 31	8	10 59 31 41	11	10 32	15	11 22 32 49	11	34 33 23	1	7 20	
56	1	0 11 29 26	10	22 30 0	10	34 30 34	10	45 31	8	10 57 31 42	11	8 32	16	11 20 32 49	11	31 33 23	1	7 21	
58	1	0 9 29 26	10	21 30 0	10	32 30 34	10	44 31	8	10 55 31 42	11	6 32	16	11 18 32 50	11	29 33 24	1	7 21	
79°	54'	55'	56'	57'	58'	59'	60'	61'											
0'	10	7 29 27	10	19 30 0	10	30 30 34	10	42 31	8	10 53 31 42	11	4 32	16	11 16 32 50	11	27 33 24	1	8 23	
2	10	5 29 27	10	17 30 1	10	28 30 35	10	40 31	8	10 51 31 42	11	2 32	16	11 14 32 50	11	25 33 24	1	8 23	
4	10	4 29 27	10	15 30 1	10	26 30 35	10	38 31	9	10 49 31 42	11	0 32	16	11 12 32 50	11	23 33 24	1	8 24	
6	10	2 29 27	10	13 30 1	10	24 30 35	10	36 31	9	10 47 31 43	10	58 32	17	11 10 32 50	11	21 33 24	1	8 25	
8	10	0 29 27	10	11 30 1	10	23 30 35	10	34 31	9	10 45 31 43	10	56 32	17	11 8 32 51	11	19 33 25	1	9 26	
10	10	58 29 28	10	9 30 1	10	21 30 35	10	32 31	9	10 43 31 43	10	54 32	17	11 6 32 51	11	17 33 25	1	9 26	
12	10	56 29 28	10	8 30 2	10	19 30 36	10	30 31	9	10 41 31 43	10	52 32	17	11 4 32 51	11	15 33 25	1	9 27	
14	10	54 29 28	10	6 30 2	10	17 30 36	10	28 31	10	10 39 31 43	10	50 32	17	11 2 32 51	11	13 33 25	1	10 28	
16	10	53 29 28	10	4 30 2	10	15 30 36	10	26 31	10	10 37 31 44	10	48 32	18	11 0 32 51	11	11 33 25	1	10 28	
18	10	51 29 28	10	2 30 2	10	13 30 36	10	24 31	10	10 35 31 44	10	46 32	18	10 58 32 52	11	9 33 26	1	10 29	
20	10	49 29 28	10	0 30 2	10	11 30 36	10	22 31	10	10 33 31 44	10	44 32	18	10 56 32 52	11	7 33 26	1	10 30	
22	10	47 29 29	9	58 30 3	10	9 30 36	10	20 31	10	10 31 31 44	10	43 32	18	10 54 32 52	11	5 33 26	1	10 30	
24	10	45 29 29	9	56 30 3	10	7 30 37	10	18 31	11	10 29 31 45	10	41 32	18	10 52 32 52	11	3 33 26	1	11 31	
26	10	44 29 29	9	55 30 3	10	6 30 37	10	17 31	11	10 28 31 45	10	39 32	19	10 50 32 53	11	1 33 27	1	11 32	
28	10	42 29 29	9	53 30 3	10	4 30 37	10	15 31	11	10 26 31 45	10	37 32	19	10 47 32 53	10	58 33 27	1	11 32	
30	10	40 29 29	9	51 30 3	10	2 30 37	10	13 31	11	10 24 31 45	10	35 32	19	10 45 32 53	10	56 33 27	1	11 33	
32	10	38 29 30	9	49 30 4	10	0 30 37	10	11 31	11	10 22 31 45	10	33 32	19	10 43 32 53	10	54 33 27	1	11 33	
34	10	36 29 30	9	47 30 4	9	58 30 38	10	9 31	12	10 20 31 46	10	31 32	20	10 41 32 53	10	52 33 27	1	11 33	
36	10	34 29 30	9	45 30 4	9	56 30 38	10	7 31	12	10 18 31 46	10	29 32	20	10 39 32 54	10	50 33 28	1	8 8	
38	10	33 29 30	9	43 30 4	9	54 30 38	10	5 31	12	10 16 31 46	10	27 32	20	10 37 32 54	10	48 33 28	1	8 8	
40	10	31 29 30	9	42 30 4	9	52 30 38	10	3 31	12	10 14 31 46	10	25 32	20	10 36 32 54	10	46 33 28	1	8 8	
42	10	29 29 31	9	40 30 5	9	50 30 38	10	1 31	12	10 12 31 46	10	23 32	20	10 34 32 54	10	44 33 28	1	8 8	
44	10	27 29 31	9	38 30 5	9	48 30 39	9	59 31	13	10 10 31 47	10	21 32	21	10 32 32 55	10	42 33 29	1	8 8	
46	10	25 29 31	9	36 30 5	9	47 30 39	9	57 31	13	10 8 31 47	10	19 32	21	10 30 32 55	10	40 33 29	1	8 8	
48	10	24 29 31	9	34 30 5	9	45 30 39	9	55 31	13	10 6 31 47	10	17 32	21	10 27 32 55	10	38 33 29	1	8 8	
50	10	22 29 31	9	32 30 5	9	43 30 39	9	53 31	13	10 4 31 47	10	15 32	21	10 25 32 55	10	36 33 29	1	8 8	
52	10	20 29 32	9	30 30 6	9	41 30 39	9	52 31	13	10 2 31 47	10	13 32	21	10 23 32 55	10	34 33 29	1	8 8	
54	10	18 29 32	9	29 30 6	9	39 30 40	9	50 31	14	10 0 31 48	10	11 32	22	10 21 32 56	10	32 33 30	1	8 8	
56	10	16 29 32	9	27 30 6	9	37 30 40	9	48 31	14	9 58 31 48	10	9 32	22	10 19 32 56	10	30 33 30	1	8 8	
58	10	14 29 32	9	25 30 6	9	35 30 40	9	46 31	14	9 56 31 48	10	7 32	22	10 17 32 56	10	28 33 30	1	8 8	

(w.) The Correction of the Moon's Altitude, and the Aux. Angle A. (80° and 81°)															Seconds of R. P.					
App. Alt.	Minutes of Moon's Hor. Parallax.														n	Corr.	A			
	54'		55'		56'		57'		58'		59'		60'							
	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°						
80°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°						
0'	9 13 29 32	9 23 30 6	9 33 30 40	9 44 31 14	9 54 31 48	10 5 32 22	10 15 32 56	10 25 33 30	10 35 34 04	10 45 34 38	10 55 35 12	11 5 35 46	11 15 36 20	11 25 36 54	1	0	1			
2	9 11 29 33	9 21 30 7	9 31 30 40	9 42 31 14	9 52 31 48	10 3 32 22	10 13 32 56	10 23 33 30	10 33 34 04	10 43 34 38	10 53 35 12	11 3 35 46	11 13 36 20	11 23 36 54	2	0	1			
4	9 9 29 33	9 19 30 7	9 30 30 41	9 40 31 15	9 50 31 49	10 1 32 23	10 11 32 57	10 21 33 31	10 31 34 05	10 41 34 39	10 51 35 13	11 1 35 47	11 11 36 21	11 21 36 55	4	1	2			
6	9 7 29 33	9 17 30 7	9 28 30 41	9 38 31 15	9 48 31 49	9 59 32 23	10 9 32 57	10 19 33 31	10 29 34 05	10 39 34 39	10 49 35 13	11 9 35 47	11 19 36 21	11 29 36 55	6	1	3			
8	9 5 29 33	9 16 30 7	9 26 30 41	9 36 31 15	9 46 31 49	9 57 32 23	10 7 32 57	10 17 33 31	10 27 34 05	10 37 34 39	10 47 35 13	11 7 35 47	11 17 36 21	11 27 36 55	8	1	5			
10	9 3 29 33	9 14 30 7	9 24 30 41	9 34 31 15	9 44 31 49	9 54 32 23	10 5 32 57	10 15 33 31	10 25 34 05	10 35 34 39	10 45 35 13	11 5 35 47	11 15 36 21	11 25 36 55	10	1	5			
12	9 2 29 33	9 12 30 7	9 22 30 41	9 32 31 15	9 42 31 49	9 52 32 23	10 3 32 57	10 13 33 31	10 23 34 05	10 33 34 39	10 43 35 13	11 3 35 47	11 13 36 21	11 23 36 55	12	2	6			
14	9 0 29 34	9 10 30 8	9 20 30 42	9 30 31 16	9 40 31 50	9 50 32 24	10 1 32 58	10 11 33 32	10 21 34 06	10 31 34 40	10 41 35 14	11 1 35 48	11 11 36 22	11 21 36 56	14	2	6			
16	8 58 29 34	9 8 30 8	9 18 30 42	9 28 31 16	9 38 31 50	9 48 32 24	9 59 32 58	10 9 33 32	10 19 34 06	10 29 34 40	10 39 35 14	11 9 35 48	11 19 36 22	11 29 36 56	16	2	7			
18	8 56 29 34	9 6 30 8	9 16 30 42	9 26 31 16	9 36 31 50	9 46 32 24	9 57 32 58	10 7 33 32	10 17 34 06	10 27 34 40	10 37 35 14	11 7 35 48	11 17 36 22	11 27 36 56	18	2	8			
20	8 54 29 34	9 4 30 8	9 14 30 42	9 24 31 16	9 34 31 50	9 44 32 24	9 55 32 58	10 5 33 32	10 15 34 06	10 25 34 40	10 35 35 14	11 5 35 48	11 15 36 22	11 25 36 56	20	2	9			
22	8 52 29 34	9 2 30 8	9 13 30 42	9 22 31 16	9 32 31 50	9 42 32 24	9 53 32 58	10 3 33 32	10 13 34 06	10 23 34 40	10 33 35 14	11 3 35 48	11 13 36 22	11 23 36 56	22	3	9			
24	8 51 29 34	9 1 30 8	9 11 30 42	9 21 31 16	9 31 31 50	9 40 32 24	9 51 32 58	10 1 33 32	10 11 34 06	10 21 34 40	10 31 35 14	11 1 35 48	11 11 36 22	11 21 36 56	24	3	10			
26	8 49 29 35	8 59 30 9	9 9 30 43	9 19 31 17	9 29 31 51	9 38 32 25	9 49 32 59	9 59 33 33	10 9 34 07	10 19 34 41	10 29 35 15	11 9 35 49	11 19 36 23	11 29 36 57	26	3	11			
28	8 47 29 35	8 57 30 9	9 7 30 43	9 17 31 17	9 27 31 51	9 37 32 25	9 47 32 59	9 57 33 33	10 7 34 07	10 17 34 41	10 27 35 15	11 7 35 49	11 17 36 23	11 27 36 57	28	3	11			
30	8 45 29 35	8 55 30 9	9 5 30 43	9 15 31 17	9 25 31 51	9 35 32 25	9 45 32 59	9 54 33 33	10 5 34 07	10 15 34 41	10 25 35 15	11 5 35 49	11 15 36 23	11 25 36 57	30	3	13			
32	8 43 29 35	8 53 30 9	9 3 30 43	9 13 31 17	9 23 31 51	9 33 32 25	9 43 32 59	9 52 33 33	10 3 34 07	10 13 34 41	10 23 35 15	11 3 35 49	11 13 36 23	11 23 36 57	32	4	13			
34	8 42 29 35	8 51 30 9	9 1 30 43	9 11 31 17	9 21 31 51	9 31 32 25	9 41 32 59	9 50 33 33	10 1 34 07	10 11 34 41	10 21 35 15	11 1 35 49	11 11 36 23	11 21 36 57	34	4	14			
36	8 40 29 35	8 49 30 9	9 59 30 44	9 9 31 18	9 19 31 52	9 29 32 26	9 39 32 60	9 48 33 34	10 9 34 08	10 19 34 42	10 29 35 16	11 9 35 50	11 19 36 24	11 29 36 58	36	4	15			
38	8 38 29 36	8 48 30 10	8 57 30 44	9 7 31 18	9 17 31 52	9 27 32 26	9 37 33 0	9 46 33 34	10 7 34 08	10 17 34 42	10 27 35 16	11 7 35 50	11 17 36 24	11 27 36 58	38	4	15			
40	8 36 29 36	8 46 30 10	8 56 30 44	9 5 31 18	9 15 31 52	9 25 32 26	9 34 33 0	9 44 33 34	10 5 34 08	10 15 34 42	10 25 35 16	11 5 35 50	11 15 36 24	11 25 36 58	40	4	16			
42	8 34 29 36	8 44 30 10	8 54 30 44	9 3 31 18	9 13 31 52	9 23 32 26	9 32 33 0	9 42 33 34	10 3 34 08	10 13 34 42	10 23 35 16	11 3 35 50	11 13 36 24	11 23 36 58	42	5	17			
44	8 32 29 36	8 42 30 10	8 52 30 44	9 1 31 18	9 11 31 52	9 21 32 26	9 30 33 0	9 40 33 34	10 1 34 08	10 11 34 42	10 21 35 16	11 1 35 50	11 11 36 24	11 21 36 58	44	5	17			
46	8 31 29 36	8 40 30 10	8 50 30 44	9 0 31 18	9 9 31 52	9 19 32 26	9 28 33 1	9 38 33 35	10 9 34 09	10 19 34 43	10 29 35 17	11 9 35 51	11 19 36 25	11 29 36 59	46	5	18			
48	8 29 29 36	8 38 30 11	8 48 30 45	8 58 31 19	9 7 31 53	9 17 32 27	9 26 33 1	9 36 33 35	10 7 34 09	10 17 34 43	10 27 35 17	11 7 35 51	11 17 36 25	11 27 36 59	48	5	19			
50	8 27 29 37	8 36 30 11	8 46 30 45	8 56 31 19	9 5 31 53	9 15 32 27	9 24 33 1	9 34 33 35	10 5 34 09	10 15 34 43	10 25 35 17	11 5 35 51	11 15 36 25	11 25 36 59	50	5	20			
52	8 25 29 37	8 35 30 11	8 44 30 45	8 54 31 19	9 3 31 53	9 13 32 27	9 22 33 1	9 32 33 35	10 3 34 09	10 13 34 43	10 23 35 17	11 3 35 51	11 13 36 25	11 23 36 59	52	6	20			
54	8 23 29 37	8 33 30 11	8 42 30 45	8 52 31 19	9 1 31 53	9 11 32 27	9 20 33 1	9 30 33 35	10 1 34 09	10 11 34 43	10 21 35 17	11 1 35 51	11 11 36 25	11 21 36 59	54	6	21			
56	8 21 29 37	8 31 30 11	8 40 30 45	8 50 31 19	8 59 31 53	9 9 32 27	9 18 33 1	9 28 33 36	10 9 34 09	10 19 34 43	10 29 35 17	11 9 35 51	11 19 36 25	11 29 36 59	56	6	22			
58	8 20 29 37	8 29 30 11	8 38 30 45	8 48 31 20	8 57 31 54	9 7 32 28	9 16 33 2	9 26 33 36	10 7 34 10	10 17 34 44	10 27 35 18	11 7 35 52	11 17 36 26	11 27 37 00	58	6	23			
81°	54'	55'	56'	57'	58'	59'	60'	61'												
0'	8 18 29 37	8 27 30 12	8 37 30 46	8 46 31 20	8 55 31 54	9 5 32 28	9 14 33 2	9 24 33 36	10 4 34 10	10 14 34 44	10 24 35 18	11 4 35 52	11 14 36 26	11 24 36 60	0	6	24			
2	8 16 29 38	8 25 30 12	8 35 30 46	8 44 31 20	8 53 31 54	9 3 32 28	9 12 33 2	9 22 33 36	10 2 34 10	10 12 34 44	10 22 35 18	11 2 35 52	11 12 36 26	11 22 36 60	2	7	24			
4	8 14 29 38	8 23 30 12	8 33 30 46	8 42 31 20	8 51 31 54	9 1 32 28	9 10 33 2	9 20 33 36	10 0 34 10	10 10 34 44	10 20 35 18	11 0 35 52	11 10 36 26	11 20 36 60	4	7	25			
6	8 12 29 38	8 22 30 12	8 31 30 46	8 40 31 20	8 49 31 54	8 59 32 28	9 8 33 2	9 17 33 36	9 58 34 10	10 8 34 44	10 18 35 18	11 8 35 52	11 18 36 26	11 28 36 60	6	7	26			
8	8 10 29 38	8 20 30 12	8 29 30 46	8 38 31 20	8 47 31 54	8 57 32 28	9 6 33 3	9 15 33 37	9 56 34 10	10 6 34 44	10 16 35 18	11 6 35 52	11 16 36 26	11 26 36 60	8	7	27			
10	8 9 29 38	8 18 30 12	8 27 30 46	8 36 31 20	8 45 31 55	8 55 32 29	9 4 33 3	9 13 33 37	9 54 34 10	10 4 34 44	10 14 35 18	11 4 35 52	11 14 36 26	11 24 36 60	10	8	28			
12	8 7 29 38	8 16 30 12	8 25 30 47	8 34 31 21	8 44 31 55	8 53 32 29	9 2 33 3	9 11 33 37	9 52 34 10	10 2 34 44	10 12 35 18	11 2 35 52	11 12 36 26	11 22 36 60	12	8	28			
14	8 5 29 39	8 14 30 13	8 23 30 47	8 32 31 21	8 42 31 55	8 51 32 29	9 0 33 3	9 9 33 37	9 50 34 10	10 0 34 44	10 10 35 18	11 0 35 52	11 10 36 26	11 20 36 60	14	9	29			
16	8 3 29 39	8 12 30 13	8 21 30 47	8 30 31 21	8 40 31 55	8 49 32 29	8 58 33 3	9 7 33 37	9 48 34 10	10 7 34 44	10 17 35 18	11 7 35 52	11 17 36 26	11 27 36 60	16	9	30			
18	8 1 29 39	8 10 30 13	8 19 30 47	8 29 31 21	8 38 31 55	8 47 32 29	8 56 33 3	9 5 33 38	9 46 34 10	10 5 34 44	10 15 35 18	11 5 35 52	11 15 36 26	11 25 36 60	18	9	31			
20	7 59 29 39	8 8 30 13	8 17 30 47	8 27 31 21	8 36 31 55	8 45 32 29	8 54 33 4	9 3 33 38	9 44 34 10	10 3 34 44	10 13 35 18	11 3 35 52	11 13 36 26	11 23 36 60	20	9	32			
22	7 58 29 39	8 7 30 13	8 16 30 47	8 25 31 21	8 34 31 56	8 43 32 30	8 52 33 4	9 1 33 38	9 42 34 10	10 1 34 44	10 11 35 18	11 1 35 52	11 11 36 26	11 21 36 60	22	9	32			
24	7 56 29 39	8 5 30 13	8 14 30 48	8 23 31 22	8 32 31 56	8 41 32 30	8 50 33 4	8 59 33 38	9 40 34 10	10 9 34 44	10 19 35 18	11 9 35 52	11 19 36 26	11 29 36 60	24	9	33			
26	7 54 29 39	8 3 30 14	8 12 30 48	8 21 31 22	8 30 31 56	8 39 32 30	8 48 33 4	8 57 33 38	9 38 34 10	10 7 34 44	10 17 35 18	11 7 35 52	11 17 36 26	11 27 36 60	26	9	33			
28	7 52 29 40	8 1 30 14	8 10 30 48	8 19 31 22	8 28 31 56	8 37 32 30	8 46 33 4	8 55 33 38	9 36 34 10	10 5 34 44	10 15 35 18	11 5 35 52	11 15 36 26	11 25 36 60	28	9	34			
30	7 50 29 40	7 59 30 14	8 8 30 48	8 17 31 22	8 26 31 56	8 35 32 30	8 44 33 4	8 53 33 39	9 34 34 10	10 3 34 44	10 13 35 18	11 3 35 52	11 13 36 26	11 23 36 60	30	9	34			
32	7 48 29 40	7 57 30 14	8 6 30 48	8 15 3																

(82° and 83°) The Correction of the Moon's Altitude, and the Aux. Angle A. (w.)																	Seconds of H. P.
App. Alt.	Minutes of Moon's Hor. Parallax.																
	54	55'	56'	57'	58'	59'	60'	61'									A
82°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	
0'	7 23 29 42	7 31 30 16	7 39 30 50	7 48 31 25	7 56 31 59	8 5 32 33	8 13 33	7 8 21 33 41	1	0	1	2	0	1	3	0	1
2	7 21 29 42	7 29 30 16	7 38 30 51	7 46 31 25	7 54 31 59	8 3 32 33	8 11 33	7 8 19 33 41	3	0	2	4	0	2	5	1	3
4	7 19 29 42	7 27 30 17	7 36 30 51	7 44 31 25	7 52 31 59	8 1 32 33	8 9 33	7 8 17 33 42	5	1	3	6	1	3	7	1	4
6	7 17 29 43	7 26 30 17	7 34 30 51	7 42 31 25	7 50 31 59	7 59 32 33	8 7 33	7 8 15 33 42	7	1	4	8	1	5	9	1	5
8	7 15 29 43	7 24 30 17	7 32 30 51	7 40 31 25	7 48 31 59	7 57 32 33	8 5 33	8 8 13 33 42	9	1	5	10	1	6	11	1	6
10	7 14 29 43	7 22 30 17	7 30 30 51	7 38 31 25	7 46 31 59	7 55 32 34	8 3 33	8 8 11 33 42	11	1	6	12	1	7	13	2	7
12	7 12 29 43	7 20 30 17	7 28 30 51	7 36 31 25	7 44 32 0	7 53 32 34	8 1 33	8 8 9 33 42	13	2	7	14	2	8	15	2	8
14	7 10 29 43	7 18 30 17	7 26 30 51	7 34 31 26	7 42 32 0	7 50 32 34	7 59 33	8 8 7 33 42	15	2	8	16	2	9	17	2	10
16	7 8 29 43	7 16 30 17	7 24 30 52	7 32 31 26	7 40 32 0	7 49 32 34	7 57 33	8 8 5 33 42	17	2	10	18	2	10	19	2	11
18	7 6 29 43	7 14 30 18	7 22 30 52	7 30 31 26	7 38 32 0	7 47 32 34	7 55 33	8 8 3 33 43	19	2	11	20	2	11	21	2	12
20	7 4 29 43	7 12 30 18	7 20 30 52	7 28 31 26	7 36 32 0	7 44 32 34	7 52 33	9 8 1 33 43	21	2	12	22	2	13	23	3	13
22	7 3 29 44	7 11 30 18	7 18 30 52	7 26 31 26	7 35 32 0	7 42 32 35	7 50 33	9 7 58 33 43	23	3	13	24	3	14	25	3	14
24	7 1 29 44	7 9 30 18	7 17 30 52	7 25 31 26	7 33 32 0	7 40 32 35	7 48 33	9 7 56 33 43	25	3	14	26	3	15	27	3	16
26	6 59 29 44	7 7 30 18	7 15 30 52	7 23 31 27	7 31 32 1	7 38 32 35	7 46 33	9 7 54 33 43	27	3	16	28	3	16	29	3	17
28	6 57 29 44	7 5 30 18	7 13 30 53	7 21 31 27	7 29 32 1	7 36 32 35	7 44 33	9 7 52 33 43	29	3	17	30	4	17	31	4	18
30	6 55 29 44	7 3 30 18	7 11 30 53	7 19 31 27	7 27 32 1	7 34 32 35	7 42 33	9 7 50 33 44	31	4	18	32	4	19	33	4	19
32	6 53 29 44	7 1 30 18	7 9 30 53	7 17 31 27	7 25 32 1	7 32 32 35	7 40 33	10 7 48 33 44	33	4	20	34	4	20	35	4	21
34	6 52 29 44	6 59 30 19	7 7 30 53	7 15 31 27	7 23 32 1	7 30 32 35	7 38 33	10 7 46 33 44	35	4	21	36	4	21	37	4	22
36	6 50 29 45	6 58 30 19	7 5 30 53	7 13 31 27	7 21 32 1	7 28 32 36	7 36 33	10 7 44 33 44	37	4	22	38	4	22	39	5	23
38	6 48 29 45	6 56 30 19	7 3 30 53	7 11 31 27	7 19 32 2	7 26 32 36	7 34 33	10 7 42 33 44	39	5	23	40	5	24	41	5	24
40	6 46 29 45	6 54 30 19	7 1 30 53	7 9 31 27	7 17 32 2	7 24 32 36	7 32 33	10 7 40 33 44	41	5	24	42	5	25	43	5	25
42	6 44 29 45	6 52 30 19	6 59 30 53	7 7 31 28	7 15 32 2	7 22 32 36	7 30 33	10 7 38 33 45	43	5	25	44	5	26	45	5	26
44	6 42 29 45	6 50 30 19	6 58 30 54	7 5 31 28	7 13 32 2	7 20 32 36	7 28 33	11 7 36 33 45	45	5	26	46	6	26	47	6	27
46	6 41 29 45	6 48 30 19	6 56 30 54	7 3 31 28	7 11 32 2	7 18 32 36	7 26 33	11 7 34 33 45	47	6	27	48	6	28	49	6	28
48	6 39 29 45	6 46 30 20	6 54 30 54	7 1 31 28	7 9 32 2	7 16 32 37	7 24 33	11 7 32 33 45	49	6	28	50	6	29	51	6	29
50	6 37 29 45	6 44 30 20	6 52 30 54	6 59 31 28	7 7 32 2	7 14 32 37	7 22 33	11 7 29 33 45	51	6	29	52	6	30	53	7	30
52	6 35 29 46	6 43 30 20	6 50 30 54	6 57 31 28	7 5 32 3	7 12 32 37	7 20 33	11 7 27 33 45	53	7	30	54	7	31	55	7	31
54	6 33 29 46	6 41 30 20	6 48 30 54	6 56 31 29	7 3 32 3	7 10 32 37	7 18 33	11 7 25 33 46	55	7	31	56	7	32	57	7	32
56	6 31 29 46	6 39 30 20	6 46 30 54	6 54 31 29	7 1 32 3	7 8 32 37	7 16 33	11 7 23 33 46	57	7	32	58	7	33	59	7	33
58	6 30 29 46	6 37 30 20	6 44 30 55	6 52 31 29	6 59 32 3	7 6 32 37	7 14 33	12 7 21 33 46	59	7	33	60	8	34	61	8	34
83°	54'	55'	56'	57'	58'	59'	60'	61'									A
0'	6 28 29 46	6 35 30 21	6 42 30 55	6 50 31 29	6 57 32 3	7 4 32 38	7 12 33 12	7 19 33 46	41	5	24	42	5	24	43	5	25
2	6 26 29 46	6 33 30 21	6 40 30 55	6 48 31 29	6 55 32 3	7 2 32 38	7 10 33 12	7 17 33 46	43	5	25	44	5	26	45	5	26
4	6 24 29 46	6 31 30 21	6 38 30 55	6 46 31 29	6 53 32 4	7 0 32 38	7 7 33 12	7 15 33 46	45	5	26	46	6	26	47	6	27
6	6 22 29 47	6 29 30 21	6 37 30 55	6 44 31 29	6 51 32 4	6 58 32 38	7 5 33 12	7 13 33 47	47	6	27	48	6	28	49	6	28
8	6 20 29 47	6 28 30 21	6 35 30 55	6 42 31 30	6 49 32 4	6 56 32 38	7 3 33 12	7 11 33 47	49	6	28	50	6	29	51	6	29
10	6 19 29 47	6 26 30 21	6 33 30 55	6 40 31 30	6 47 32 4	6 54 32 38	7 1 33 12	7 9 33 47	51	6	29	52	6	30	53	7	30
12	6 17 29 47	6 24 30 21	6 31 30 56	6 38 31 30	6 45 32 4	6 52 32 38	6 59 33 13	7 6 33 47	53	7	30	54	7	31	55	7	31
14	6 15 29 47	6 22 30 21	6 29 30 56	6 36 31 30	6 43 32 4	6 50 32 39	6 57 33 13	7 4 33 47	55	7	31	56	7	32	57	7	32
16	6 13 29 47	6 20 30 22	6 27 30 56	6 34 31 30	6 41 32 4	6 48 32 39	6 55 33 13	7 2 33 47	57	7	32	58	7	33	59	7	33
18	6 11 29 47	6 18 30 22	6 25 30 56	6 32 31 30	6 39 32 4	6 46 32 39	6 53 33 13	7 0 33 47	59	7	33	60	8	34	61	8	34
20	6 9 29 47	6 16 30 22	6 23 30 56	6 30 31 30	6 37 32 5	6 44 32 39	6 51 33 13	6 58 33 47	61	8	34	62	8	35	63	8	35
22	6 8 29 48	6 14 30 22	6 21 30 56	6 28 31 31	6 35 32 5	6 42 32 39	6 49 33 13	6 56 33 48	63	8	35	64	8	36	65	8	36
24	6 6 29 48	6 13 30 22	6 19 30 56	6 26 31 31	6 33 32 5	6 40 32 39	6 47 33 13	6 54 33 48	65	8	36	66	8	37	67	8	37
26	6 4 29 48	6 11 30 22	6 18 30 56	6 24 31 31	6 31 32 5	6 38 32 39	6 45 33 14	6 52 33 48	67	8	37	68	8	38	69	8	38
28	6 2 29 48	6 9 30 22	6 16 30 57	6 22 31 31	6 29 32 5	6 36 32 39	6 43 33 14	6 50 33 49	69	8	38	70	8	39	71	8	39
30	6 0 29 48	6 7 30 22	6 14 30 57	6 20 31 31	6 27 32 5	6 34 32 40	6 41 33 14	6 48 33 48	71	8	39	72	8	40	73	8	40
32	5 58 29 48	6 5 30 23	6 12 30 57	6 19 31 31	6 25 32 5	6 32 32 40	6 39 33 14	6 46 33 48	73	8	40	74	8	41	75	8	41
34	5 57 29 48	6 3 30 23	6 10 30 57	6 17 31 31	6 23 32 6	6 30 32 40	6 37 33 14	6 44 33 48	75	8	41	76	8	42	77	8	42
36	5 55 29 49	6 1 30 23	6 8 30 57	6 15 31 31	6 21 32 6	6 28 32 40	6 35 33 14	6 41 33 49	77	8	42	78	8	43	79	8	43
38	5 53 29 49	5 59 30 23	6 6 30 57	6 13 31 32	6 19 32 6	6 26 32 40	6 33 33 14	6 39 33 49	79	8	43	80	8	44	81	8	44
40	5 51 29 49	5 58 30 23	6 4 30 57	6 11 31 32	6 17 32 6	6 24 32 40	6 31 33 15	6 37 33 49	81	8	44	82	8	45	83	8	45
42	5 49 29 49	5 56 30 23	6 2 30 58	6 9 31 32	6 15 32 6	6 22 32 40	6 29 33 15	6 35 33 49	83	8	45	84	8	46	85	8	46
44	5 47 29 49	5 54 30 23	6 0 30 58	6 7 31 32	6 13 32 6	6 20 32 41	6 27 33 15	6 33 33 49	85	8	46	86	8	47	87	8	47
46	5 46 29 49	5 52 30 24	5 58 30 58	6 5 31 32	6 12 32 6	6 18 32 41	6 25 33 15	6 31 33 49	87	8	47	88	8	48	89	8	48
48	5 44 29 49	5 50 30 24	5 57 30 58	6 3 31 32	6 10 32 7	6 16 32 41	6 22 33 15	6 29 33 49	89	8	48	90	8	49	91	8	49
50	5 42 29 49	5 48 30 24	5 55 30 58	6 1 31 32	6 8 32 7	6 14 32 41	6 20 33 15	6 27 33 50	91	8	49	92	8	50	93	8	50
52	5 40 29 50	5 46 30 24	5 53 30 58	5 59 31 33	6 6 32 7	6 12 32 41	6 18 33 15	6 25 33 50	93	8	50	94	8	51	95	8	51
54	5 38 29 50	5 45 30 24	5 51 30 58	5 57 31 33	6 4 32 7	6 10 32 41	6 16 33 16	6 23 33 50	95	8	51	96	8	52	97	8	52
56	5 36 29 50	5 43 30 24	5 49 30 59	5 55 31 33	6 2 32 7	6 8 32 41	6 14 33 16	6 21 33 50	97	8	52	98	8	53	99	8	53
58	5 35 29 50	5 41 30 24	5 47 30 59	5 53 31 33	6 0 32 7	6 6 32 42	6 12 33 16	6 19 33 50	99	8	53	100	8	54			

(w.)		The Correction of the Moon's Altitude, and the Aux. Angle A. (88° and 89°)																Seconds of H. P.	
App. Alt.	88°	Minutes of Moon's Hor. Parallax.																Corr.	A
		54'	55'	56'	57'	58'	59'	60'	61'	Corr.	A	Corr.	A	Corr.	A	Corr.	A		
		Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°	Corr. +	A 60°		
0'	1 51 29 59	1 53 30 34	1 55 31 8	1 57 31 43	1 59 32 17	2 2 32 52	2 4 33 26	2 6 34 1	2 8 34 56	1 53 31 8	1 55 31 43	1 57 31 43	1 59 32 17	2 2 32 52	2 4 33 26	2 6 34 1	2 8 34 56	1 0	1
2	1 49 29 59	1 51 30 34	1 53 31 8	1 55 31 43	1 57 31 43	1 59 32 17	2 2 32 52	2 4 33 26	2 6 34 1	1 51 30 34	1 53 31 8	1 55 31 43	1 57 31 43	1 59 32 17	2 2 32 52	2 4 33 26	2 6 34 1	2 0	1
4	1 47 29 59	1 49 30 34	1 51 31 8	1 53 31 43	1 55 32 17	1 58 32 52	2 0 33 26	2 2 34 1	2 4 34 56	1 49 30 34	1 51 31 8	1 53 31 43	1 55 32 17	1 58 32 52	2 0 33 26	2 2 34 1	2 4 34 56	4 0	2
6	1 46 29 59	1 48 30 34	1 50 31 8	1 52 31 43	1 53 32 17	1 56 32 52	1 58 33 26	1 59 34 1	2 1 34 56	1 48 30 34	1 50 31 8	1 52 31 43	1 53 32 17	1 56 32 52	1 58 33 26	1 59 34 1	2 1 34 56	6 0	3
8	1 44 29 59	1 46 30 34	1 48 31 8	1 50 31 43	1 52 32 17	1 53 32 52	1 55 33 26	1 57 34 1	2 1 35 1	1 46 30 34	1 48 31 8	1 50 31 43	1 52 32 17	1 53 32 52	1 55 33 26	1 57 34 1	2 1 35 1	8 0	4
10	1 42 29 59	1 44 30 34	1 46 31 8	1 48 31 43	1 50 32 17	1 51 32 52	1 53 33 26	1 55 34 1	2 1 35 1	1 44 30 34	1 46 31 8	1 48 31 43	1 50 32 17	1 51 32 52	1 53 33 26	1 55 34 1	2 1 35 1	10 0	5
12	1 40 29 59	1 42 30 34	1 44 31 8	1 46 31 43	1 48 32 17	1 49 32 52	1 51 33 26	1 53 34 1	2 1 35 1	1 42 30 34	1 44 31 8	1 46 31 43	1 48 32 17	1 49 32 52	1 51 33 26	1 53 34 1	2 1 35 1	12 0	6
14	1 38 29 59	1 40 30 34	1 42 31 8	1 44 31 43	1 46 32 17	1 47 32 52	1 49 33 26	1 51 34 1	2 1 35 1	1 40 30 34	1 42 31 8	1 44 31 43	1 46 32 17	1 47 32 52	1 49 33 26	1 51 34 1	2 1 35 1	14 0	7
16	1 36 29 59	1 38 30 34	1 40 31 8	1 42 31 43	1 44 32 18	1 45 32 52	1 47 33 27	1 49 34 1	2 1 35 1	1 38 30 34	1 40 31 8	1 42 31 43	1 44 32 18	1 45 32 52	1 47 33 27	1 49 34 1	2 1 35 1	16 0	8
18	1 34 29 59	1 36 30 34	1 38 31 8	1 40 31 43	1 42 32 18	1 43 32 52	1 45 33 27	1 47 34 1	2 1 35 1	1 36 30 34	1 38 31 8	1 40 31 43	1 42 32 18	1 43 32 52	1 45 33 27	1 47 34 1	2 1 35 1	18 0	9
20	1 33 29 59	1 34 30 34	1 36 31 8	1 38 31 43	1 40 32 18	1 41 32 52	1 43 33 27	1 45 34 1	2 1 35 1	1 34 30 34	1 36 31 8	1 38 31 43	1 40 32 18	1 41 32 52	1 43 33 27	1 45 34 1	2 1 35 1	20 0	10
22	1 31 30 0	1 32 30 34	1 34 31 8	1 36 31 43	1 38 32 18	1 39 32 52	1 41 33 27	1 43 34 1	2 1 35 1	1 32 30 34	1 34 31 8	1 36 31 43	1 38 32 18	1 39 32 52	1 41 33 27	1 43 34 1	2 1 35 1	22 0	11
24	1 29 30 0	1 31 30 34	1 32 31 8	1 34 31 43	1 36 32 18	1 37 32 52	1 39 33 27	1 41 34 1	2 1 35 1	1 30 30 34	1 32 31 8	1 34 31 43	1 36 32 18	1 37 32 52	1 39 33 27	1 41 34 1	2 1 35 1	24 0	12
26	1 27 30 0	1 29 30 34	1 30 31 8	1 32 31 43	1 34 32 18	1 35 32 52	1 37 33 27	1 39 34 1	2 1 35 1	1 28 30 34	1 30 31 8	1 32 31 43	1 34 32 18	1 35 32 52	1 37 33 27	1 39 34 1	2 1 35 1	26 0	13
28	1 25 30 0	1 27 30 34	1 28 31 8	1 30 31 43	1 32 32 18	1 33 32 52	1 35 33 27	1 36 34 1	2 1 35 1	1 26 30 34	1 28 31 8	1 30 31 43	1 32 32 18	1 33 32 52	1 35 33 27	1 36 34 1	2 1 35 1	28 0	14
30	1 23 30 0	1 25 30 34	1 26 31 8	1 28 31 43	1 30 32 18	1 31 32 52	1 33 33 27	1 34 34 1	2 1 35 1	1 24 30 34	1 26 31 8	1 28 31 43	1 30 32 18	1 31 32 52	1 33 33 27	1 34 34 1	2 1 35 1	30 0	15
32	1 21 30 0	1 23 30 34	1 24 31 8	1 26 31 43	1 28 32 18	1 29 32 52	1 31 33 27	1 32 34 1	2 1 35 1	1 22 30 34	1 24 31 8	1 26 31 43	1 28 32 18	1 29 32 52	1 31 33 27	1 32 34 1	2 1 35 1	32 0	16
34	1 20 30 0	1 21 30 34	1 23 31 8	1 24 31 43	1 26 32 18	1 27 32 52	1 29 33 27	1 30 34 1	2 1 35 1	1 20 30 34	1 21 30 34	1 23 31 8	1 24 31 43	1 26 32 18	1 27 32 52	1 29 33 27	1 30 34 1	34 0	17
36	1 18 30 0	1 19 30 34	1 21 31 8	1 22 31 43	1 24 32 18	1 25 32 52	1 27 33 27	1 28 34 1	2 1 35 1	1 18 30 34	1 19 30 34	1 21 31 8	1 22 31 43	1 24 32 18	1 25 32 52	1 27 33 27	1 28 34 1	36 0	18
38	1 16 30 0	1 17 30 34	1 19 31 8	1 20 31 43	1 22 32 18	1 23 32 53	1 25 33 27	1 26 34 1	2 1 35 1	1 16 30 34	1 17 30 34	1 19 31 8	1 20 31 43	1 22 32 18	1 23 32 53	1 25 33 27	1 26 34 1	38 0	19
40	1 14 30 0	1 15 30 34	1 17 31 8	1 18 31 43	1 20 32 18	1 21 32 53	1 22 33 27	1 24 34 1	2 1 35 1	1 14 30 34	1 15 30 34	1 17 31 8	1 18 31 43	1 20 32 18	1 21 32 53	1 22 33 27	1 24 34 1	40 0	20
42	1 12 30 0	1 14 30 34	1 15 31 8	1 16 31 44	1 18 32 18	1 19 32 53	1 20 33 27	1 22 34 1	2 1 35 1	1 12 30 34	1 13 31 8	1 15 31 44	1 16 31 44	1 18 32 18	1 19 32 53	1 20 33 27	1 22 34 1	42 0	21
44	1 10 30 0	1 12 30 34	1 13 31 8	1 14 31 44	1 16 32 18	1 17 32 53	1 18 33 27	1 20 34 1	2 1 35 1	1 10 30 34	1 11 31 8	1 13 31 44	1 14 31 44	1 16 32 18	1 17 32 53	1 18 33 27	1 20 34 1	44 0	22
46	1 9 30 0	1 10 30 34	1 11 31 8	1 12 31 44	1 14 32 18	1 15 32 53	1 16 33 27	1 18 34 1	2 1 35 1	1 9 30 34	1 10 30 34	1 11 31 8	1 12 31 44	1 14 32 18	1 15 32 53	1 16 33 27	1 18 34 1	46 0	23
48	1 7 30 0	1 8 30 34	1 9 31 8	1 10 31 44	1 12 32 18	1 13 32 53	1 14 33 27	1 16 34 1	2 1 35 1	1 7 30 34	1 8 30 34	1 9 31 8	1 10 31 44	1 12 32 18	1 13 32 53	1 14 33 27	1 16 34 1	48 0	24
50	1 5 30 0	1 6 30 34	1 7 31 8	1 8 31 44	1 10 32 18	1 11 32 53	1 12 33 27	1 14 34 1	2 1 35 1	1 5 30 34	1 6 30 34	1 7 31 8	1 8 31 44	1 10 32 18	1 11 32 53	1 12 33 27	1 14 34 1	50 0	25
52	1 3 30 0	1 4 30 34	1 5 31 8	1 6 31 44	1 8 32 18	1 9 32 53	1 10 33 28	1 11 34 1	2 1 35 1	1 3 30 34	1 4 30 34	1 5 31 8	1 6 31 44	1 8 32 18	1 9 32 53	1 10 33 28	1 11 34 1	52 0	26
54	1 1 30 0	1 2 30 34	1 3 31 8	1 4 31 44	1 6 32 18	1 7 32 53	1 8 33 28	1 9 34 1	2 1 35 1	1 1 30 34	1 2 30 34	1 3 31 8	1 4 31 44	1 6 32 18	1 7 32 53	1 8 33 28	1 9 34 1	54 0	27
56	0 59 30 0	1 0 30 34	1 2 31 8	1 3 31 44	1 4 32 18	1 5 32 53	1 6 33 28	1 7 34 1	2 1 35 1	0 59 30 0	1 0 30 34	1 2 31 8	1 3 31 44	1 4 32 18	1 5 32 53	1 6 33 28	1 7 34 1	56 0	28
58	0 57 30 0	0 58 30 34	1 0 31 8	1 1 31 44	1 2 32 18	1 3 32 53	1 4 33 28	1 5 34 1	2 1 35 1	0 57 30 0	0 58 30 34	1 0 31 8	1 1 31 44	1 2 32 18	1 3 32 53	1 4 33 28	1 5 34 1	58 0	29
89°	54'	55'	56'	57'	58'	59'	60'	61'		40	1 23	1 23 53	1 23 53	1 23 53	1 23 53	1 23 53	1 23 53	40	1 23
0'	0 56 30 0	0 57 30 34	0 58 31 8	0 59 31 44	1 0 32 18	1 1 32 53	1 2 33 28	1 3 34 1	2 1 35 1	0 56 30 0	0 57 30 34	0 58 31 8	0 59 31 44	1 0 32 18	1 1 32 53	1 2 33 28	1 3 34 1	41 0	1 24
2	0 54 30 0	0 55 30 34	0 56 31 8	0 57 31 44	0 58 32 18	0 59 32 53	1 0 33 28	1 1 34 1	2 1 35 1	0 54 30 0	0 55 30 34	0 56 31 8	0 57 31 44	0 58 32 18	0 59 32 53	1 0 33 28	1 1 34 1	42 0	1 25
4	0 52 30 0	0 53 30 34	0 54 31 8	0 55 31 44	0 56 32 18	0 57 32 53	0 58 33 28	0 59 34 1	2 1 35 1	0 52 30 0	0 53 30 34	0 54 31 8	0 55 31 44	0 56 32 18	0 57 32 53	0 58 33 28	0 59 34 1	43 0	1 26
6	0 50 30 0	0 51 30 34	0 52 31 8	0 53 31 44	0 54 32 19	0 55 32 53	0 56 33 28	0 57 34 1	2 1 35 1	0 50 30 0	0 51 30 34	0 52 31 8	0 53 31 44	0 54 32 19	0 55 32 53	0 56 33 28	0 57 34 1	44 0	1 27
8	0 48 30 0	0 49 30 34	0 50 31 8	0 51 31 44	0 52 32 19	0 53 32 53	0 54 33 28	0 55 34 1	2 1 35 1	0 48 30 0	0 49 30 34	0 50 31 8	0 51 31 44	0 52 32 19	0 53 32 53	0 54 33 28	0 55 34 1	45 0	1 28
10	0 47 30 0	0 47 30 34	0 48 31 8	0 49 31 44	0 50 32 19	0 51 32 53	0 52 33 28	0 53 34 1	2 1 35 1	0 47 30 0	0 47 30 34	0 48 31 8	0 49 31 44	0 50 32 19	0 51 32 53	0 52 33 28	0 53 34 1	46 0	1 29
12	0 45 30 0	0 46 30 34	0 46 31 8	0 47 31 44	0 48 32 19	0 49 32 53	0 50 33 28	0 51 34 1	2 1 35 1	0 45 30 0	0 46 30 34	0 46 31 8	0 47 31 44	0 48 32 19	0 49 32 53	0 50 33 28	0 51 34 1	47 0	1 30
14	0 43 30 0	0 44 30 35	0 45 31 8	0 46 31 44	0 47 32 19	0 48 32 53	0 49 33 28	0 50 34 1	2 1 35 1	0 43 30 0	0 44 30 35	0 45 31 8	0 46 31 44	0 47 32 19	0 48 32 53	0 49 33 28	0 50 34 1	48 0	1 31
16	0 41 30 0	0 42 30 35	0 43 31 8	0 44 31 44	0 45 32 19	0 46 32 53	0 47 33 28	0 48 34 1	2 1 35 1	0 41 30 0	0 42 30 35	0 43 31 8	0 44 31 44	0 45 32 19	0 46 32 53	0 47 33 28	0 48 34 1	49 0	1 32
18	0 39 30 0	0 40 30 35	0 41 31 8	0 42 31 44	0 43 32 19	0 44 32 53	0 45 33 28	0 46 34 1	2 1 35 1	0 39 30 0	0 40 30 35	0 41 31 8	0 42 31 44	0 43 32 19	0 44 32 53	0 45 33 28	0 46 34 1	50 0	1 33
20	0 38 30 0	0 38 30 35	0 39 31 8	0 40 31 44	0 41 32 19	0 42 32 53	0 43 33 28	0 44 34 1	2 1 35 1	0 38 30 0	0 38 30 35	0 39 31 8	0 40 31 44	0 41 32 19	0 42 32 53	0 43 33 28	0 44 34 1	51 0	1 34
22	0 36 30 0	0 36 30 35	0 37 31 8	0 38 31 44	0 39 32 19	0 40 32 53	0 41 33 28	0 42 34 1	2 1 35 1	0 36 30 0	0 36 30 35	0 37 31 8	0 38 31 44	0 39 32					

Traverse Table.

(x.)

Differences		1		2		3		4		5		6		7		8		Cross
Com	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.		
1 01.0 00.0 01.0 00.1 01.0 00.1	01.0 00.0	02.0 00.1	03.0 00.1	04.0 00.2	05.0 00.2	06.0 00.3	07.0 00.3	08.0 00.4	79									
	01.0 00.1	02.0 00.2	03.0 00.2	04.0 00.4	05.0 00.5	06.0 00.6	07.0 00.7	08.0 00.8	80									
	01.0 00.1	02.0 00.3	03.0 00.4	04.0 00.6	04.9 00.7	05.9 00.9	06.9 01.0	07.9 01.2	81									
	01.0 00.2	02.0 00.4	02.9 00.6	03.9 00.8	04.9 01.0	05.9 01.2	06.9 01.4	07.8 01.6	82									
2 01.0 00.2 01.0 00.3 00.9 00.3	01.0 00.2	01.9 00.5	02.9 00.7	03.9 01.0	04.9 01.2	05.8 01.5	06.8 01.7	07.8 01.9	83									
	01.0 00.3	01.9 00.6	02.9 00.9	03.8 01.2	04.8 01.5	05.7 01.7	06.7 02.0	07.7 02.3	84									
	00.9 00.3	01.9 00.7	02.8 01.0	03.8 01.3	04.7 01.7	05.6 02.0	06.6 02.4	07.5 02.7	85									
	00.9 00.4	01.8 00.8	02.8 01.1	03.7 01.5	04.6 01.9	05.5 02.3	06.5 02.7	07.4 03.1	86									
3 00.9 00.4 00.9 00.5 00.9 00.5	00.9 00.4	01.8 00.9	02.7 01.3	03.6 01.7	04.5 02.1	05.4 02.6	06.3 03.0	07.2 03.4	87									
	00.9 00.5	01.8 00.9	02.6 01.4	03.5 01.9	04.4 02.4	05.3 02.8	06.2 03.3	07.1 03.8	88									
	00.9 00.5	01.7 01.0	02.6 01.5	03.4 02.1	04.3 02.6	05.1 03.1	06.0 03.6	06.9 04.1	89									
	00.8 00.6	01.7 01.1	02.5 01.7	03.3 02.2	04.2 02.8	05.0 03.3	05.8 03.9	06.7 04.4	90									
4 00.8 00.6 00.8 00.6 00.7 00.7	00.8 00.6	01.6 01.2	02.4 01.8	03.2 02.4	04.0 03.0	04.8 03.6	05.6 04.2	06.4 04.8	91									
	00.8 00.6	01.5 01.3	02.3 01.9	03.1 02.5	03.9 03.2	04.6 03.8	05.4 04.4	06.2 05.1	92									
	00.7 00.7	01.5 01.3	02.2 02.0	03.0 02.7	03.7 03.4	04.4 04.0	05.2 04.7	05.9 05.4	93									
	00.7 00.7	01.4 01.4	02.1 02.1	02.8 02.8	03.5 03.5	04.2 04.2	04.9 04.9	05.7 05.7	94									
10 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45	01.0 00.0	02.0 00.0	03.0 00.1	04.0 00.1	05.0 00.1	06.0 00.1	07.0 00.1	08.0 00.1	89									
	01.0 00.0	02.0 00.1	03.0 00.1	04.0 00.1	05.0 00.2	06.0 00.2	07.0 00.2	08.0 00.3	88									
	01.0 00.1	02.0 00.1	03.0 00.2	04.0 00.2	05.0 00.3	06.0 00.3	07.0 00.4	08.0 00.4	87									
	01.0 00.1	02.0 00.1	03.0 00.2	04.0 00.3	05.0 00.3	06.0 00.4	07.0 00.5	08.0 00.6	86									
	01.0 00.1	02.0 00.2	03.0 00.3	04.0 00.3	05.0 00.4	06.0 00.5	07.0 00.6	08.0 00.7	85									
	01.0 00.1	02.0 00.2	03.0 00.3	04.0 00.4	05.0 00.5	06.0 00.6	07.0 00.7	08.0 00.8	84									
	01.0 00.1	02.0 00.2	03.0 00.4	04.0 00.5	05.0 00.6	06.0 00.7	06.9 00.9	07.9 01.0	83									
	01.0 00.1	02.0 00.3	03.0 00.4	04.0 00.6	05.0 00.7	05.9 00.8	06.9 01.0	07.9 01.1	82									
	01.0 00.2	02.0 00.3	03.0 00.5	04.0 00.6	04.9 00.8	05.9 00.9	06.9 01.1	07.9 01.3	81									
	01.0 00.2	02.0 00.3	03.0 00.5	03.9 00.7	04.9 00.9	05.9 01.0	06.9 01.2	07.9 01.4	80									
	01.0 00.2	02.0 00.4	02.9 00.6	03.9 00.8	04.9 01.0	05.9 01.1	06.9 01.3	07.9 01.5	79									
	01.0 00.2	02.0 00.4	02.9 00.6	03.9 00.8	04.9 01.0	05.9 01.2	06.8 01.5	07.8 01.7	78									
	01.0 00.2	01.9 00.4	02.9 00.7	03.9 00.9	04.9 01.1	05.8 01.3	06.8 01.6	07.8 01.8	77									
	01.0 00.2	01.9 00.5	02.9 00.7	03.9 01.0	04.9 01.2	05.8 01.5	06.8 01.7	07.8 01.9	76									
	01.0 00.3	01.9 00.5	02.9 00.8	03.9 01.0	04.8 01.3	05.8 01.6	06.8 01.8	07.7 02.1	75									
	01.0 00.3	01.9 00.6	02.9 00.8	03.8 01.1	04.8 01.4	05.8 01.7	06.7 01.9	07.7 02.2	74									
	01.0 00.3	01.9 00.6	02.9 00.9	03.8 01.2	04.8 01.5	05.7 01.8	06.7 02.0	07.7 02.3	73									
	01.0 00.3	01.9 00.6	02.9 00.9	03.8 01.2	04.8 01.5	05.7 01.9	06.7 02.2	07.6 02.5	72									
	00.9 00.3	01.9 00.7	02.8 01.0	03.8 01.3	04.7 01.6	05.7 02.0	06.6 02.3	07.6 02.6	71									
	00.9 00.3	01.9 00.7	02.8 01.0	03.8 01.4	04.7 01.7	05.6 02.1	06.6 02.4	07.5 02.7	70									
00.9 00.4	01.9 00.7	02.8 01.1	03.7 01.4	04.7 01.8	05.6 02.2	06.5 02.5	07.5 02.9	69										
00.9 00.4	01.9 00.7	02.8 01.1	03.7 01.5	04.6 01.9	05.6 02.2	06.5 02.6	07.4 03.0	68										
00.9 00.4	01.8 00.8	02.8 01.2	03.7 01.6	04.6 02.0	05.5 02.3	06.4 02.7	07.4 03.1	67										
00.9 00.4	01.8 00.8	02.7 01.2	03.7 01.6	04.6 02.0	05.5 02.4	06.4 02.8	07.3 03.3	66										
00.9 00.4	01.8 00.8	02.7 01.3	03.6 01.7	04.5 02.1	05.4 02.5	06.3 03.0	07.3 03.4	65										
00.9 00.4	01.8 00.9	02.7 01.3	03.6 01.8	04.5 02.2	05.4 02.6	06.3 03.1	07.2 03.5	64										
00.9 00.5	01.8 00.9	02.7 01.4	03.6 01.8	04.5 02.3	05.3 02.7	06.2 03.2	07.1 03.6	63										
00.9 00.5	01.8 00.9	02.6 01.4	03.5 01.9	04.4 02.3	05.3 02.8	06.2 03.3	07.1 03.8	62										
00.9 00.5	01.7 01.0	02.6 01.5	03.5 01.9	04.4 02.4	05.2 02.9	06.1 03.4	07.0 03.9	61										
00.9 00.5	01.7 01.0	02.6 01.5	03.5 02.0	04.3 02.5	05.2 03.0	06.1 03.5	06.9 04.0	60										
00.9 00.5	01.7 01.0	02.6 01.5	03.4 02.1	04.3 02.6	05.1 03.1	06.0 03.6	06.9 04.1	59										
00.8 00.5	01.7 01.1	02.5 01.6	03.4 02.1	04.2 02.6	05.1 03.2	05.9 03.7	06.8 04.2	58										
00.8 00.5	01.7 01.1	02.5 01.6	03.4 02.2	04.2 02.7	05.0 03.3	05.9 03.8	06.7 04.4	57										
00.8 00.6	01.7 01.1	02.5 01.7	03.3 02.2	04.1 02.8	05.0 03.4	05.8 03.9	06.6 04.5	56										
00.8 00.6	01.6 01.1	02.5 01.7	03.3 02.3	04.1 02.9	04.9 03.4	05.7 04.0	06.6 04.6	55										
00.8 00.6	01.6 01.2	02.4 01.8	03.2 02.4	04.0 02.9	04.9 03.5	05.7 04.1	06.5 04.7	54										
00.8 00.6	01.6 01.2	02.4 01.8	03.2 02.4	04.0 03.0	04.8 03.6	05.6 04.2	06.4 04.8	53										
00.8 00.6	01.6 01.2	02.4 01.8	03.2 02.5	03.9 03.1	04.7 03.7	05.5 04.3	06.3 04.9	52										
00.8 00.6	01.6 01.3	02.3 01.9	03.1 02.5	03.9 03.1	04.7 03.8	05.4 04.4	06.2 05.0	51										
00.8 00.6	01.5 01.3	02.3 01.9	03.1 02.6	03.8 03.2	04.6 03.9	05.4 04.5	06.1 05.1	50										
00.8 00.7	01.5 01.3	02.3 02.0	03.0 02.6	03.8 03.3	04.5 03.9	05.3 04.6	06.0 05.2	49										
00.7 00.7	01.5 01.3	02.2 02.0	03.0 02.7	03.7 03.3	04.5 04.0	05.2 04.7	05.9 05.4	48										
00.7 00.7	01.5 01.4	02.2 02.0	02.9 02.7	03.7 03.4	04.4 04.1	05.1 04.8	05.9 05.5	47										
00.7 00.7	01.4 01.4	02.2 02.1	02.9 02.8	03.6 03.5	04.3 04.2	05.0 04.9	05.8 05.6	46										
00.7 00.7	01.4 01.4	02.1 02.1	02.8 02.8	03.5 03.5	04.2 04.2	04.9 04.9	05.7 05.7	45										
Cross	Dep. Diff. Lat.	Dep. Diff. Lat.	Dep. Diff. Lat.	Dep. Diff. Lat.	Dep. Diff. Lat.	Dep. Diff. Lat.	Dep. Diff. Lat.	Dep. Diff. Lat.	Cross									

Traverse Table.

(x.)

Distance. 9		10		11		12		13		14		15		16	
Dist.	Dep.	Dist.	Dep.	Dist.	Dep.	Dist.	Dep.	Dist.	Dep.	Dist.	Dep.	Dist.	Dep.	Dist.	Dep.
09.0 00.4	10.0 00.5	11.0 00.5	12.0 00.6	13.0 00.6	14.0 00.7	15.0 00.7	16.0 00.8	09.0 00.9	10.0 01.0	10.9 01.1	11.9 01.2	12.9 01.3	13.9 01.4	14.9 01.5	15.9 01.6
08.9 01.3	09.9 01.5	10.9 01.6	11.9 01.8	12.9 01.9	13.8 02.1	14.8 02.2	15.8 02.3	08.8 01.8	09.8 02.0	10.8 02.1	11.8 02.3	12.7 02.5	13.7 02.7	14.7 02.9	15.7 03.1
08.7 02.2	09.7 02.4	10.7 02.7	11.6 02.9	12.6 03.2	13.6 03.4	14.6 03.6	15.5 03.9	08.6 02.6	09.6 02.9	10.5 03.2	11.5 03.5	12.4 03.8	13.4 04.1	14.4 04.4	15.3 04.6
08.5 03.0	09.4 03.4	10.4 03.7	11.3 04.0	12.2 04.4	13.2 04.7	14.1 05.1	15.1 05.4	08.3 03.4	09.2 03.8	10.2 04.2	11.1 04.6	12.0 05.0	12.9 05.4	13.9 05.7	14.8 06.1
08.1 03.8	09.0 04.3	09.9 04.7	10.8 05.1	11.8 05.6	12.7 06.0	13.6 06.4	14.5 06.8	07.9 04.2	08.8 04.7	09.7 05.2	10.6 05.7	11.5 06.1	12.3 06.6	13.2 07.1	14.1 07.5
07.7 04.6	08.6 05.1	09.4 05.7	10.3 06.2	11.2 06.7	12.0 07.2	12.9 07.7	13.7 08.2	07.5 05.0	08.3 05.6	09.1 06.1	10.0 06.7	10.8 07.2	11.6 07.8	12.5 08.3	13.3 08.9
07.2 05.4	08.0 06.0	08.8 06.6	09.6 07.1	10.4 07.7	11.2 08.3	12.0 08.9	12.8 09.5	07.0 05.7	07.7 06.3	08.5 07.0	09.3 07.6	10.1 08.2	10.8 08.9	11.6 09.5	12.4 10.1
06.7 06.0	07.4 06.7	08.2 07.4	08.9 08.1	09.6 08.7	10.4 09.4	11.1 10.1	11.9 10.7	06.4 06.4	07.1 07.1	07.8 07.8	08.5 08.5	09.2 09.2	09.9 09.9	10.6 10.6	11.3 11.3
09.0 00.2	10.0 00.2	11.0 00.2	12.0 00.2	13.0 00.2	14.0 00.2	15.0 00.3	16.0 00.3	09.0 00.3	10.0 00.3	11.0 00.4	12.0 00.4	13.0 00.5	14.0 00.5	15.0 00.5	16.0 00.6
09.0 00.5	10.0 00.5	11.0 00.6	12.0 00.6	13.0 00.7	14.0 00.7	15.0 00.8	16.0 00.8	09.0 00.6	10.0 00.7	11.0 00.8	12.0 00.8	13.0 00.9	14.0 01.0	15.0 01.0	16.0 01.1
09.0 00.8	10.0 00.9	11.0 01.0	12.0 01.0	13.0 01.1	13.9 01.2	14.9 01.3	15.9 01.4	09.0 00.9	09.9 01.0	10.9 01.1	11.9 01.3	12.9 01.4	13.9 01.5	14.9 01.6	15.9 01.7
08.9 01.1	09.9 01.2	10.9 01.3	11.9 01.5	12.9 01.6	13.9 01.7	14.9 01.8	15.9 01.9	08.9 01.3	09.9 01.4	10.9 01.5	11.9 01.7	12.9 01.8	13.9 01.9	14.9 02.1	15.8 02.2
08.9 01.4	09.9 01.6	10.9 01.7	11.9 01.9	12.8 02.0	13.8 02.2	14.8 02.3	15.8 02.5	08.9 01.6	09.8 01.7	10.8 01.9	11.8 02.1	12.8 02.3	13.8 02.4	14.8 02.6	15.8 02.8
08.8 01.7	09.8 01.9	10.8 02.1	11.8 02.3	12.8 02.5	13.7 02.7	14.7 02.9	15.7 03.1	08.8 01.9	09.8 02.1	10.8 02.3	11.7 02.5	12.7 02.7	13.7 02.9	14.7 03.1	15.7 03.3
08.8 01.9	09.8 02.1	10.8 02.3	11.7 02.5	12.7 02.7	13.6 03.1	14.6 03.4	15.6 03.6	08.8 02.0	09.7 02.2	10.7 02.5	11.6 02.9	12.6 03.1	13.6 03.4	14.6 03.6	15.5 03.9
08.7 02.2	09.7 02.4	10.7 02.7	11.6 02.9	12.6 03.1	13.6 03.4	14.6 03.6	15.5 03.9	08.7 02.3	09.6 02.6	10.6 02.8	11.6 03.1	12.6 03.4	13.6 03.6	14.5 03.9	15.5 04.1
08.7 02.5	09.6 02.8	10.6 03.0	11.5 03.3	12.5 03.6	13.5 03.9	14.4 04.1	15.4 04.4	08.6 02.6	09.6 02.9	10.5 03.2	11.5 03.5	12.4 03.8	13.4 04.1	14.3 04.4	15.3 04.7
08.6 02.8	09.5 03.1	10.5 03.4	11.4 03.7	12.4 04.0	13.3 04.3	14.3 04.6	15.2 04.9	08.6 02.8	09.5 03.1	10.4 03.3	11.3 03.9	12.3 04.2	13.2 04.6	14.2 04.9	15.1 05.2
08.5 02.9	09.5 03.3	10.4 03.6	11.3 03.9	12.2 04.4	13.2 04.6	14.1 05.1	15.0 05.5	08.5 03.1	09.4 03.4	10.3 03.8	11.3 04.1	12.2 04.4	13.2 04.8	14.1 05.1	15.0 05.5
08.4 03.2	09.3 03.6	10.3 03.9	11.2 04.3	12.1 04.7	13.1 05.0	14.0 05.4	14.9 05.7	08.4 03.2	09.3 03.7	10.2 04.1	11.1 04.5	12.1 04.9	13.0 05.2	13.9 05.6	14.8 06.0
08.3 03.4	09.2 03.9	10.1 04.3	11.0 04.7	12.0 05.1	12.9 05.5	13.8 05.9	14.7 06.3	08.3 03.5	09.2 03.9	10.1 04.3	11.0 04.7	12.0 05.1	12.9 05.5	13.8 05.9	14.7 06.3
08.2 03.7	09.1 04.1	10.0 04.5	11.0 04.9	11.9 05.3	12.8 05.7	13.7 06.1	14.6 06.5	08.2 03.7	09.1 04.2	10.0 04.6	10.9 05.1	11.8 05.5	12.7 05.9	13.6 06.3	14.5 06.8
08.2 03.8	09.1 04.2	10.0 04.6	10.9 05.1	11.8 05.5	12.7 05.9	13.6 06.3	14.5 06.8	08.1 03.9	09.0 04.4	09.9 04.8	10.8 05.3	11.7 05.7	12.6 06.1	13.5 06.6	14.4 07.0
08.1 03.9	09.0 04.4	09.9 04.8	10.8 05.3	11.7 05.7	12.6 06.1	13.5 06.6	14.4 07.0	08.0 04.1	08.9 04.5	09.8 05.0	10.7 05.4	11.6 05.9	12.5 06.4	13.4 06.8	14.3 07.3
07.9 04.2	08.8 04.7	09.7 05.2	10.6 05.6	11.5 06.1	12.4 06.6	13.2 07.0	14.1 07.5	07.9 04.2	08.8 04.7	09.7 05.2	10.6 05.6	11.5 06.1	12.4 06.6	13.2 07.0	14.1 07.5
07.9 04.4	08.7 04.8	09.6 05.3	10.5 05.8	11.4 06.3	12.2 06.8	13.1 07.3	14.0 07.8	07.8 04.5	08.7 05.0	09.5 05.5	10.4 06.0	11.3 06.5	12.1 07.0	13.0 07.5	13.9 08.0
07.7 04.6	08.6 05.2	09.4 05.7	10.3 06.2	11.1 06.7	12.0 07.2	12.9 07.7	13.7 08.2	07.6 04.8	08.5 05.3	09.3 05.8	10.2 06.4	11.0 06.9	11.9 07.4	12.7 07.9	13.6 08.5
07.5 04.9	08.4 05.4	09.2 06.0	10.1 06.5	10.9 07.1	11.7 07.6	12.6 08.2	13.4 08.7	07.5 05.0	08.3 05.6	09.1 06.2	09.9 06.7	10.8 07.3	11.6 07.8	12.4 08.4	13.3 08.9
07.5 05.0	08.3 05.6	09.1 06.2	09.9 06.7	10.8 07.3	11.6 07.8	12.4 08.4	13.3 08.9	07.4 05.2	08.2 05.7	09.0 06.3	09.8 06.9	10.6 07.5	11.5 08.0	12.3 08.6	13.1 09.2
07.3 05.3	08.1 05.9	08.9 06.5	09.7 07.1	10.5 07.6	11.3 08.2	12.1 08.8	12.9 09.4	07.3 05.3	08.1 05.9	08.9 06.5	09.7 07.1	10.5 07.6	11.3 08.2	12.1 08.8	12.9 09.4
07.2 05.4	08.0 06.0	08.8 06.6	09.6 07.2	10.4 07.8	11.2 08.4	12.0 09.0	12.8 09.6	07.1 05.5	07.9 06.2	08.7 06.8	09.5 07.4	10.2 08.0	11.0 08.6	11.8 09.2	12.6 09.9
07.1 05.5	07.9 06.2	08.7 06.8	09.5 07.4	10.2 08.0	11.0 08.6	11.8 09.2	12.6 09.9	07.0 05.7	07.8 06.3	08.5 06.9	09.3 07.6	10.1 08.2	10.9 08.8	11.7 09.4	12.4 10.1
06.9 05.8	07.7 06.4	08.4 07.1	09.2 07.7	10.0 08.4	10.7 09.0	11.5 09.6	12.3 10.3	06.9 05.8	07.7 06.4	08.4 07.1	09.2 07.7	10.0 08.4	10.7 09.0	11.5 09.6	12.3 10.3
06.8 05.9	07.5 06.6	08.3 07.2	09.1 07.9	09.8 08.5	10.6 09.2	11.3 09.8	12.1 10.5	06.8 06.0	07.4 06.7	08.2 07.4	08.9 08.0	09.7 08.7	10.4 09.4	11.1 10.0	11.9 10.7
06.6 06.1	07.3 06.8	08.0 07.5	08.8 08.2	09.5 08.9	10.2 09.5	11.0 10.2	11.7 10.9	06.5 06.3	07.2 06.9	07.9 07.6	08.6 08.3	09.4 09.0	10.1 09.7	10.8 10.4	11.5 11.1
06.4 06.4	07.1 07.1	07.8 07.8	08.5 08.5	09.2 09.2	09.9 09.9	10.6 10.6	11.3 11.3	06.4 06.4	07.1 07.1	07.8 07.8	08.5 08.5	09.2 09.2	09.9 09.9	10.6 10.6	11.3 11.3

Traverse Table.

(x.)

Stations. 17			18			19			20			21			22			23			24			Crs.
Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	
17.0	00.8		18.0	00.9		19.0	00.9		20.0	01.0		21.0	01.0		22.0	01.1		23.0	01.1		24.0	01.2		
16.9	01.7		17.9	01.8		18.9	01.9		19.9	02.0		20.9	02.0		21.9	02.2		22.9	02.3		23.9	02.4		
16.8	02.5		17.8	02.6		18.8	02.8		19.8	02.9		20.8	03.1		21.8	03.2		22.7	03.4		23.7	03.5		
16.7	03.3		17.7	03.5		18.6	03.7		19.6	03.9		20.6	04.1		21.6	04.3		22.6	04.5		23.5	04.7		
16.5	04.1		17.5	04.4		18.4	04.6		19.4	04.9		20.4	05.1		21.3	05.3		22.3	05.6		23.3	05.8		
16.3	04.9		17.2	05.2		18.2	05.5		19.1	05.8		20.1	06.1		21.1	06.4		22.0	06.7		23.0	07.0		
16.0	05.7		17.0	06.1		17.9	06.4		18.8	06.7		19.8	07.1		20.7	07.4		21.7	07.7		22.6	08.1		
15.7	06.5		16.6	06.9		17.6	07.3		18.5	07.7		19.4	08.0		20.3	08.4		21.3	08.8		22.2	09.2		
15.4	07.3		16.3	07.7		17.2	08.1		18.1	08.6		19.0	09.0		19.9	09.4		20.8	09.8		21.7	10.3		
15.0	08.0		15.9	08.5		16.8	09.0		17.6	09.4		18.5	09.9		19.4	10.4		20.3	10.8		21.2	11.3		
14.6	08.7		15.4	09.3		16.3	09.8		17.2	10.3		18.0	10.8		18.9	11.3		19.7	11.8		20.6	12.3		
14.1	09.4		15.0	10.0		15.8	10.6		16.6	11.1		17.5	11.7		18.3	12.2		19.1	12.8		20.0	13.3		
13.7	10.1		14.5	10.7		15.3	11.3		16.1	11.9		16.9	12.5		17.7	13.1		18.5	13.7		19.3	14.3		
13.1	10.8		13.9	11.4		14.7	12.0		15.5	12.7		16.2	13.3		17.0	14.0		17.8	14.6		18.5	15.2		
12.6	11.4		13.3	12.1		14.1	12.8		14.8	13.4		15.6	14.1		16.3	14.8		17.0	15.4		17.8	16.1		
12.0	12.0		12.7	12.7		13.4	13.4		14.1	14.1		14.8	14.8		15.6	15.6		16.3	16.3		17.0	17.0		
17.0	00.3		18.0	00.3		19.0	00.3		20.0	00.3		21.0	00.4		22.0	00.4		23.0	00.4		24.0	00.4		
17.0	00.6		18.0	00.6		19.0	00.7		20.0	00.7		21.0	00.7		22.0	00.8		23.0	00.8		24.0	00.8		
17.0	00.9		18.0	00.9		19.0	01.0		20.0	01.0		21.0	01.1		22.0	01.2		23.0	01.2		24.0	01.3		
17.0	01.2		18.0	01.3		19.0	01.3		20.0	01.4		20.9	01.5		21.9	01.5		22.9	01.6		23.9	01.7		
16.9	01.5		17.9	01.6		18.9	01.7		19.9	01.7		20.9	01.8		21.9	01.9		22.9	02.0		23.9	02.1		
16.9	01.8		17.9	01.9		18.9	02.0		19.9	02.1		20.9	02.2		21.9	02.3		22.9	02.4		23.9	02.5		
16.9	02.1		17.9	02.2		18.9	02.3		19.9	02.4		20.8	02.6		21.8	02.7		22.8	02.8		23.8	02.9		
16.8	02.4		17.8	02.5		18.8	02.6		19.8	02.8		20.8	02.9		21.8	03.1		22.8	03.2		23.8	03.3		
16.8	02.7		17.8	02.8		18.8	03.0		19.8	03.1		20.7	03.3		21.7	03.4		22.7	03.6		23.7	03.8		
16.7	03.0		17.7	03.1		18.7	03.3		19.7	03.5		20.7	03.6		21.7	03.8		22.7	04.0		23.6	04.2		
16.7	03.2		17.7	03.4		18.7	03.6		19.6	03.8		20.6	04.0		21.6	04.2		22.6	04.4		23.6	04.6		
16.6	03.5		17.6	03.7		18.6	04.0		19.6	04.2		20.5	04.4		21.5	04.6		22.5	04.8		23.5	05.0		
16.6	03.8		17.5	04.0		18.5	04.3		19.5	04.5		20.5	04.7		21.4	04.9		22.4	05.2		23.4	05.4		
16.5	04.1		17.5	04.4		18.4	04.6		19.4	04.8		20.4	05.1		21.3	05.3		22.3	05.6		23.3	05.8		
16.4	04.4		17.4	04.7		18.4	04.9		19.3	05.2		20.3	05.4		21.3	05.7		22.2	06.0		23.2	06.2		
16.3	04.7		17.3	05.0		18.3	05.2		19.2	05.5		20.2	05.8		21.1	06.1		22.1	06.3		23.1	06.6		
16.3	05.0		17.2	05.3		18.2	05.6		19.1	05.8		20.1	06.1		21.0	06.4		22.0	06.7		23.0	07.0		
16.2	05.3		17.1	05.6		18.1	05.9		19.0	06.2		20.0	06.5		20.9	06.8		21.9	07.1		22.8	07.4		
16.1	05.5		17.0	05.9		18.0	06.2		18.9	06.5		19.9	06.8		20.8	07.2		21.7	07.5		22.7	07.8		
16.0	05.8		16.9	06.2		17.9	06.5		18.8	06.8		19.7	07.2		20.7	07.5		21.6	07.9		22.6	08.2		
15.9	06.1		16.8	06.5		17.7	06.8		18.7	07.2		19.6	07.5		20.5	07.9		21.5	08.2		22.4	08.6		
15.8	06.4		16.7	06.7		17.6	07.1		18.5	07.5		19.6	07.9		20.4	08.2		21.3	08.6		22.3	09.0		
15.6	06.6		16.6	07.0		17.5	07.4		18.4	07.8		19.3	08.2		20.3	08.6		21.2	09.0		22.1	09.4		
15.5	06.9		16.4	07.3		17.4	07.7		18.3	08.1		19.2	08.5		20.1	08.9		21.0	09.4		21.9	09.8		
15.4	07.2		16.3	07.6		17.2	08.0		18.1	08.5		19.0	08.9		19.9	09.3		20.8	09.7		21.8	10.1		
15.3	07.5		16.2	07.9		17.1	08.3		18.0	08.8		18.9	09.2		19.8	09.6		20.7	10.1		21.6	10.5		
15.1	07.7		16.0	08.2		16.9	08.6		17.8	09.1		18.7	09.5		19.6	10.0		20.5	10.4		21.4	10.9		
15.0	08.0		15.9	08.5		16.8	08.9		17.7	09.4		18.5	09.9		19.4	10.3		20.3	10.8		21.2	11.3		
14.9	08.2		15.7	08.7		16.6	09.2		17.5	09.7		18.4	10.2		19.2	10.7		20.1	11.2		21.0	11.6		
14.7	08.5		15.6	09.0		16.5	09.5		17.3	10.0		18.2	10.5		19.1	11.0		19.9	11.5		20.8	12.0		
14.6	08.8		15.4	09.3		16.3	09.8		17.1	10.3		18.0	10.8		18.9	11.3		19.7	11.8		20.6	12.4		
14.4	09.0		15.3	09.5		16.1	10.1		17.0	10.6		17.8	11.1		18.7	11.7		19.5	12.2		20.4	12.7		
14.3	09.3		15.1	09.8		15.9	10.3		16.8	10.9		17.6	11.4		18.5	12.0		19.3	12.5		20.1	13.1		
14.1	09.5		14.9	10.1		15.8	10.6		16.6	11.2		17.4	11.7		18.2	12.3		19.1	12.9		19.9	13.4		
13.9	09.8		14.7	10.3		15.6	10.9		16.4	11.5		17.2	12.0		18.0	12.6		18.8	13.2		19.7	13.8		
13.8	10.0		14.6	10.6		15.4	11.2		16.2	11.8		17.0	12.3		17.8	12.9		18.6	13.5		19.4	14.1		
13.6	10.2		14.4	10.8		15.2	11.4		16.0	12.0		16.8	12.6		17.6	13.2		18.4	13.8		19.2	14.4		
13.4	10.5		14.2	11.1		15.0	11.7		15.8	12.3		16.5	12.9		17.3	13.5		18.1	14.2		18.9	14.8		
13.2	10.7		14.0	11.3		14.8	12.0		15.5	12.6		16.3	13.2		17.1	13.8		17.9	14.5		18.7	15.1		
13.0	10.9		13.8	11.6		14.6	12.2		15.3	12.9		16.1	13.5		16.9	14.1		17.6	14.8		18.4	15.4		
12.8	11.2		13.6	11.8		14.3	12.5		15.1	13.1		15.8	13.8		16.6	14.4		17.4	15.1		18.1	15.7		
12.6	11.4		13.4	12.0		14.1	12.7		14.9	13.4		15.6	14.1		16.3	14.7		17.1	15.4		17.8	16.1		
12.4	11.6		13.2	12.3		13.9	13.0		14.6	13.6		15.4	14.3		16.1	15.0		16.8	15.7		17.6	16.4		
12.2	11.8		12.9	12.5		13.7	13.2		14.4	13.9		15.1	14.6		15.8	15.3		16.5	16.0		17.3	16.7		
12.0	12.0		12.7	12.7		13.4	13.4		14.1	14.1		14.8	14.8		15.6	15.6		16.3	16.3		17.0	17.0		
Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	

Traverse Table												(x.)												
Distance 25			26			27			28			29			30			31			32			
Cross	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.	Dist.	Lat.	Dep.
1	25.0	01.2		26.0	01.3		27.0	01.3		28.0	01.4		29.0	01.4		30.0	01.5		31.0	01.5		32.0	01.6	
2	24.9	02.4		25.9	02.5		26.9	02.6		27.9	02.7		28.9	02.8		29.9	02.9		30.9	03.0		31.8	03.1	
3	24.7	03.7		25.7	03.8		26.7	04.0		27.7	04.1		28.7	04.3		29.7	04.4		30.7	04.5		31.7	04.7	
4	24.5	04.9		25.5	05.1		26.5	05.3		27.5	05.5		28.4	05.7		29.4	05.9		30.4	06.0		31.4	06.2	
5	24.3	06.1		25.2	06.3		26.2	06.6		27.2	06.8		28.1	07.0		29.1	07.3		30.1	07.5		31.0	07.8	
6	23.9	07.3		24.9	07.5		25.8	07.8		26.8	08.1		27.8	08.4		28.7	08.7		29.7	09.0		30.6	09.3	
7	23.5	08.4		24.5	08.8		25.4	09.1		26.4	09.4		27.3	09.8		28.2	10.1		29.2	10.4		30.1	10.8	
8	23.1	09.6		24.0	10.0		24.9	10.3		25.9	10.7		26.8	11.1		27.7	11.5		28.6	11.9		29.6	12.2	
9	22.6	10.7		23.5	11.1		24.4	11.5		25.3	12.0		26.2	12.4		27.1	12.8		28.0	13.3		28.9	13.7	
10	22.1	11.8		22.9	12.3		23.8	12.7		24.7	13.2		25.6	13.7		26.5	14.1		27.3	14.6		28.2	15.1	
11	21.4	12.9		22.3	13.4		23.2	13.9		24.0	14.4		24.9	14.9		25.7	15.4		26.6	15.9		27.4	16.4	
12	20.8	13.9		21.6	14.4		22.4	15.0		23.3	15.6		24.1	16.1		24.9	16.7		25.8	17.2		26.6	17.8	
13	20.1	14.9		20.9	15.5		21.7	16.1		22.5	16.7		23.3	17.3		24.1	17.9		24.9	18.5		25.7	19.1	
14	19.3	15.9		20.1	16.5		20.9	17.1		21.6	17.8		22.4	18.4		23.2	19.0		24.0	19.7		24.7	20.3	
15	18.5	16.8		19.3	17.5		20.0	18.1		20.7	18.8		21.5	19.5		22.2	20.1		23.0	20.8		23.7	21.5	
16	17.7	17.7		18.4	18.4		19.1	19.1		19.8	19.8		20.5	20.5		21.2	21.2		21.9	21.9		22.6	22.6	
17	25.0	00.4		26.0	00.5		27.0	00.5		28.0	00.5		29.0	00.5		30.0	00.5		31.0	00.5		32.0	00.6	
18	25.0	00.9		26.0	00.9		27.0	00.9		28.0	01.0		29.0	01.0		30.0	01.0		31.0	01.1		32.0	01.1	
19	25.0	01.3		26.0	01.4		27.0	01.4		28.0	01.5		29.0	01.5		30.0	01.6		31.0	01.6		32.0	01.7	
20	24.9	01.7		25.9	01.8		26.9	01.9		27.9	02.0		28.9	02.0		29.9	02.1		30.9	02.2		31.9	02.2	
21	24.9	02.2		25.9	02.3		26.9	02.4		27.9	02.4		28.9	02.5		29.9	02.6		30.9	02.7		31.9	02.8	
22	24.9	02.6		25.9	02.7		26.9	02.8		27.8	02.9		28.8	03.0		29.8	03.1		30.8	03.2		31.8	03.3	
23	24.8	03.0		25.8	03.2		26.8	03.3		27.8	03.4		28.8	03.5		29.8	03.7		30.8	03.8		31.8	03.9	
24	24.8	03.5		25.7	03.6		26.7	03.8		27.7	03.9		28.7	04.0		29.7	04.2		30.7	04.3		31.7	04.5	
25	24.7	03.9		25.7	04.1		26.7	04.2		27.7	04.4		28.6	04.5		29.6	04.7		30.6	04.8		31.6	05.0	
26	24.6	04.3		25.6	04.5		26.6	04.7		27.6	04.9		28.6	05.0		29.5	05.2		30.5	05.4		31.5	05.6	
27	24.5	04.8		25.5	05.0		26.5	05.2		27.5	05.3		28.5	05.5		29.4	05.7		30.4	05.9		31.4	06.1	
28	24.5	05.2		25.4	05.4		26.4	05.6		27.4	05.8		28.4	06.0		29.3	06.2		30.3	06.4		31.3	06.7	
29	24.4	05.6		25.3	05.8		26.3	06.1		27.3	06.3		28.3	06.5		29.2	06.7		30.2	07.0		31.2	07.2	
30	24.3	06.0		25.2	06.3		26.2	06.5		27.2	06.8		28.1	07.0		29.1	07.3		30.1	07.5		31.0	07.7	
31	24.1	06.5		25.1	06.7		26.1	07.0		27.0	07.2		28.0	07.5		29.0	07.8		29.9	08.0		30.9	08.3	
32	24.0	06.9		25.0	07.2		26.0	07.4		26.9	07.7		27.9	08.0		28.8	08.3		29.8	08.5		30.8	08.8	
33	23.9	07.3		24.9	07.6		25.8	07.9		26.8	08.2		27.7	08.5		28.7	08.8		29.6	09.1		30.6	09.4	
34	23.8	07.7		24.7	08.0		25.7	08.3		26.6	08.7		27.6	09.0		28.5	09.3		29.5	09.6		30.4	09.9	
35	23.6	08.1		24.6	08.5		25.5	08.8		26.5	09.1		27.4	09.4		28.4	09.8		29.3	10.1		30.3	10.4	
36	23.5	08.6		24.4	08.9		25.4	09.2		26.3	09.6		27.3	09.9		28.2	10.3		29.1	10.6		30.1	10.9	
37	23.3	09.0		24.3	09.3		25.2	09.7		26.1	10.0		27.1	10.4		28.0	10.8		28.9	11.1		29.9	11.5	
38	23.2	09.4		24.1	09.7		25.0	10.1		26.0	10.5		26.9	10.9		27.8	11.2		28.7	11.6		29.7	12.0	
39	23.0	09.8		23.9	10.2		24.9	10.5		25.8	10.9		26.7	11.3		27.6	11.7		28.5	12.1		29.5	12.5	
40	22.8	10.2		23.8	10.6		24.7	11.0		25.6	11.4		26.5	11.8		27.4	12.2		28.3	12.6		29.2	13.0	
41	22.7	10.6		23.6	11.0		24.5	11.4		25.4	11.8		26.3	12.3		27.2	12.7		28.1	13.1		29.0	13.5	
42	22.5	11.0		23.4	11.4		24.3	11.8		25.2	12.3		26.1	12.7		27.0	13.2		27.9	13.6		28.8	14.0	
43	22.3	11.3		23.2	11.8		24.1	12.3		24.9	12.7		25.8	13.2		26.7	13.6		27.6	14.1		28.5	14.5	
44	22.1	11.7		23.0	12.2		23.8	12.7		24.7	13.1		25.6	13.6		26.5	14.1		27.4	14.6		28.3	15.0	
45	21.9	12.1		22.7	12.6		23.6	13.1		24.5	13.6		25.4	14.1		26.2	14.5		27.1	15.0		28.0	15.5	
46	21.7	12.5		22.5	13.0		23.4	13.5		24.2	14.0		25.1	14.5		26.0	15.0		26.8	15.5		27.7	16.0	
47	21.4	12.9		22.3	13.4		23.1	13.9		24.0	14.4		24.9	14.9		25.7	15.5		26.6	16.0		27.4	16.5	
48	21.2	13.2		22.0	13.8		22.9	14.3		23.7	14.8		24.6	15.4		25.4	15.9		26.3	16.4		27.1	17.0	
49	21.0	13.6		21.8	14.2		22.6	14.7		23.5	15.2		24.3	15.8		25.2	16.3		26.0	16.9		26.8	17.4	
50	20.7	14.0		21.6	14.5		22.4	15.1		23.2	15.7		24.0	16.2		24.9	16.8		25.7	17.3		26.5	17.9	
51	20.5	14.3		21.3	14.9		22.1	15.5		22.9	16.1		23.8	16.6		24.6	17.2		25.4	17.8		26.2	18.4	
52	20.2	14.7		21.0	15.3		21.8	15.9		22.7	16.5		23.5	17.0		24.3	17.6		25.1	18.2		25.9	18.8	
53	20.0	15.0		20.8	15.6		21.6	16.2		22.4	16.9		23.2	17.5		24.0	18.1		24.8	18.7		25.6	19.3	
54	19.7	15.4		20.5	16.0		21.3	16.6		22.1	17.2		22.9	17.9		23.6	18.5		24.4	19.1		25.2	19.7	
55	19.4	15.7		20.2	16.4		21.0	17.0		21.8	17.6		22.5	18.3		23.3	18.9		24.1	19.5		24.9	20.1	
56	19.2	16.1		19.9	16.7		20.7	17.4		21.4	18.0		22.2	18.6		23.0	19.3		23.7	19.9		24.5	20.6	
57	18.9	16.4		19.6	17.1		20.4	17.7		21.1	18.4		21.9	19.0		22.6	19.7		23.4	20.3		24.2	21.0	
58	18.6	16.7		19.3	17.4		20.1	18.1		20.8	18.7		21.6	19.4		22.3	20.1		23.0	20.7		23.8	21.4	
59	18.3	17.0		19.0	17.7		19.7	18.4		20.5	19.1		21.2	19.8		21.9	20.5		22.7	21.1		23.4	21.8	
60	18.0	17.4		18.7	18.1		19.4	18.8		20.1	19.5		20.9	20.1		21.6	20.8		22.3	21.5		23.0	22.2	
61	17.7	17.7		18.4	18.4		19.1	19.1		19.8	19.8		20.5	20.5		21.2	21.2		21.9	21.9		22.6	22.6	
62	25.0	00.4		26.0	00.5		27.0	00.5		28.0	00.5		29.0	00.5		30.0	00.5		31.0	00.5		32.0	00.6	
63	25.0	00.9		26.0	00.9		27.0																	

Traverse Table.

(x.)

Data. 33		34		35		36		37		38		39		40		
Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.
33.0 01.6	34.0 01.7	35.0 01.7	36.0 01.8	37.0 01.8	38.0 01.9	39.0 01.9	40.0 02.0	72								
32.8 03.2	33.8 03.3	34.8 03.4	35.8 03.5	36.8 03.6	37.8 03.7	38.8 03.8	39.8 03.9	73								
32.6 04.8	33.6 05.0	34.6 05.1	35.6 05.3	36.6 05.4	37.6 05.6	38.6 05.7	39.6 05.9	74								
32.4 06.4	33.3 06.6	34.3 06.8	35.3 07.0	36.3 07.2	37.3 07.4	38.2 07.6	39.2 07.8	75								
32.0 08.0	33.0 08.3	34.0 08.5	34.9 08.7	35.9 09.0	36.9 09.2	37.8 09.5	38.8 09.7	76								
31.6 09.6	32.5 09.9	33.5 10.2	34.5 10.4	35.4 10.7	36.4 11.0	37.3 11.3	38.3 11.6	77								
31.1 11.1	32.0 11.5	33.0 11.8	33.9 12.1	34.8 12.5	35.8 12.8	36.7 13.1	37.7 13.5	78								
30.5 12.6	31.4 13.0	32.3 13.4	33.3 13.8	34.2 14.2	35.1 14.5	36.0 14.9	37.0 15.3	79								
29.8 14.1	30.7 14.5	31.6 15.0	32.5 15.4	33.4 15.8	34.4 16.2	35.3 16.7	36.2 17.1	80								
29.1 15.6	30.0 16.0	30.9 16.5	31.8 17.0	32.6 17.4	33.5 17.9	34.4 18.4	35.3 18.9	81								
28.3 17.0	29.2 17.5	30.1 18.0	31.0 18.5	31.7 19.0	32.6 19.5	33.5 20.0	34.3 20.6	82								
27.4 18.3	28.3 18.9	29.1 19.4	29.9 20.0	30.8 20.6	31.6 21.1	32.4 21.7	33.3 22.2	83								
26.5 19.7	27.3 20.3	28.1 20.9	28.9 21.4	29.7 22.0	30.5 22.6	31.3 23.2	32.1 23.8	84								
25.5 20.9	26.3 21.6	27.1 22.2	27.8 22.8	28.6 23.5	29.4 24.1	30.1 24.7	30.9 25.4	85								
24.4 22.2	25.2 22.8	25.9 23.5	26.7 24.2	27.4 24.8	28.2 25.5	28.9 26.2	29.6 26.9	86								
23.3 23.3	24.0 24.0	24.7 24.7	25.5 25.5	26.2 26.2	26.9 26.9	27.6 27.6	28.3 28.3	87								
33.0 00.6	34.0 00.6	35.0 00.6	36.0 00.6	37.0 00.6	38.0 00.7	39.0 00.7	40.0 00.7	88								
33.0 01.2	34.0 01.2	35.0 01.2	36.0 01.3	37.0 01.3	38.0 01.3	39.0 01.4	40.0 01.4	89								
33.0 01.7	34.0 01.8	35.0 01.8	36.0 01.9	36.9 01.9	37.9 02.0	38.9 02.0	39.9 02.1	90								
32.9 02.3	33.9 02.4	34.9 02.4	35.9 02.5	36.9 02.6	37.9 02.7	38.9 02.7	39.9 02.8	91								
32.9 02.9	33.9 03.0	34.9 03.1	35.9 03.2	36.9 03.3	37.9 03.3	38.9 03.4	39.9 03.5	92								
32.8 03.4	33.8 03.6	34.8 03.7	35.8 03.8	36.8 03.9	37.8 04.0	38.8 04.1	39.8 04.2	93								
32.8 04.0	33.7 04.1	34.7 04.3	35.7 04.4	36.7 04.5	37.7 04.6	38.7 04.8	39.7 04.9	94								
32.7 04.6	33.7 04.7	34.7 04.9	35.6 05.0	36.6 05.1	37.6 05.3	38.6 05.4	39.6 05.6	95								
32.6 05.2	33.6 05.3	34.6 05.5	35.6 05.6	36.5 05.8	37.5 05.9	38.5 06.1	39.5 06.3	96								
32.5 05.7	33.5 05.9	34.5 06.1	35.5 06.3	36.4 06.4	37.4 06.6	38.4 06.8	39.4 06.9	97								
32.4 06.3	33.4 06.5	34.4 06.7	35.3 06.9	36.3 07.1	37.3 07.3	38.3 07.4	39.3 07.6	98								
32.3 06.9	33.3 07.1	34.2 07.3	35.2 07.5	36.2 07.7	37.2 07.9	38.1 08.1	39.1 08.3	99								
32.2 07.4	33.1 07.6	34.1 07.9	35.1 08.1	36.1 08.3	37.0 08.5	38.0 08.8	39.0 09.0	100								
32.0 08.0	33.0 08.2	34.0 08.5	34.9 08.7	35.9 09.0	36.9 09.2	37.8 09.4	38.8 09.7	76								
31.9 08.5	32.8 08.8	33.8 09.1	34.8 09.3	35.7 09.6	36.7 09.8	37.7 10.1	38.6 10.4	75								
31.7 09.1	32.7 09.4	33.6 09.6	34.6 09.9	35.6 10.2	36.5 10.5	37.5 10.7	38.5 11.0	74								
31.6 09.6	32.5 09.9	33.5 10.2	34.4 10.5	35.4 10.8	36.3 11.1	37.3 11.4	38.3 11.7	73								
31.4 10.2	32.3 10.5	33.3 10.8	34.2 11.1	35.2 11.4	36.1 11.7	37.1 12.1	38.0 12.4	72								
31.2 10.7	32.1 11.1	33.1 11.4	34.0 11.7	35.0 12.0	35.9 12.4	36.9 12.7	37.8 13.0	71								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70								
31.0 11.3	31.9 11.6	32.9 12.0	33.8 12.3	34.8 12.7	35.7 13.0	36.6 13.3	37.6 13.7	70		</						

Traverse Table.

(x.)

Distance. 41		42		43		44		45		46		47		48	
Course	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Course
1	41.0 02.0	41.9 02.1	42.9 02.1	43.9 02.2	44.9 02.2	45.9 02.3	46.9 02.3	47.9 02.4	48.9 02.4	49.9 02.5	50.9 02.5	51.9 02.6	52.9 02.6	53.9 02.7	2
2	40.8 04.0	41.8 04.1	42.8 04.2	43.8 04.3	44.8 04.4	45.8 04.5	46.8 04.6	47.8 04.7	48.8 04.8	49.8 04.9	50.8 05.0	51.8 05.1	52.8 05.2	53.8 05.3	3
3	40.6 06.0	41.5 06.2	42.5 06.3	43.5 06.5	44.5 06.6	45.5 06.7	46.5 06.9	47.5 07.0	48.5 07.1	49.5 07.2	50.5 07.3	51.5 07.4	52.5 07.5	53.5 07.6	4
4	40.2 08.0	41.2 08.2	42.2 08.4	43.2 08.6	44.1 08.8	45.1 09.0	46.1 09.2	47.1 09.4	48.1 09.6	49.1 09.8	50.1 10.0	51.1 10.2	52.1 10.4	53.1 10.6	5
5	39.8 10.0	40.7 10.2	41.7 10.4	42.7 10.7	43.7 10.9	44.6 11.2	45.6 11.4	46.6 11.7	47.6 11.9	48.6 12.2	49.6 12.4	50.6 12.7	51.6 13.0	52.6 13.3	6
6	39.2 11.9	40.2 12.2	41.2 12.5	42.1 12.8	43.1 13.1	44.0 13.3	45.0 13.6	45.9 13.9	46.9 14.2	47.9 14.5	48.9 14.8	49.9 15.1	50.9 15.4	51.9 15.7	7
7	38.6 13.8	39.5 14.1	40.5 14.5	41.4 14.8	42.4 15.2	43.3 15.5	44.3 15.8	45.2 16.2	46.2 16.5	47.2 16.8	48.2 17.1	49.2 17.4	50.2 17.7	51.2 18.0	8
8	37.9 15.7	38.8 16.1	39.7 16.5	40.6 16.8	41.6 17.2	42.5 17.6	43.4 18.0	44.4 18.4	45.4 18.7	46.4 19.0	47.4 19.3	48.4 19.6	49.4 19.9	50.4 20.2	9
9	37.1 17.5	38.0 18.0	38.9 18.4	39.8 18.8	40.7 19.2	41.6 19.7	42.5 20.1	43.4 20.5	44.4 20.8	45.4 21.1	46.4 21.4	47.4 21.7	48.4 22.0	49.4 22.3	10
10	36.2 19.3	37.0 19.8	37.9 20.3	38.8 20.7	39.7 21.2	40.6 21.7	41.5 22.2	42.4 22.6	43.4 23.0	44.4 23.3	45.4 23.6	46.4 23.9	47.4 24.2	48.4 24.5	11
11	35.2 21.1	36.0 21.6	36.9 22.1	37.7 22.6	38.6 23.1	39.5 23.6	40.3 24.2	41.2 24.7	42.2 25.1	43.2 25.4	44.2 25.7	45.2 26.0	46.2 26.3	47.2 26.6	12
12	34.1 22.8	34.9 23.3	35.8 23.9	36.6 24.4	37.4 25.0	38.2 25.6	39.1 26.1	39.9 26.7	40.9 27.1	41.9 27.4	42.9 27.7	43.9 28.0	44.9 28.3	45.9 28.6	13
13	32.9 24.4	33.7 25.0	34.5 25.6	35.3 26.2	36.1 26.8	36.9 27.4	37.7 28.0	38.6 28.6	39.6 29.0	40.6 29.3	41.6 29.6	42.6 29.9	43.6 30.2	44.6 30.5	14
14	31.7 26.0	32.5 26.6	33.2 27.3	34.0 27.9	34.8 28.5	35.6 29.2	36.3 29.8	37.1 30.4	38.0 30.9	39.0 31.3	40.0 31.6	41.0 31.9	42.0 32.2	43.0 32.5	15
15	30.4 27.5	31.1 28.2	31.9 28.9	32.6 29.5	33.3 30.2	34.1 30.9	34.8 31.6	35.6 32.2	36.4 32.9	37.2 33.5	38.0 34.1	38.8 34.7	39.6 35.3	40.4 35.9	16
16	29.0 29.0	29.7 29.7	30.4 30.4	31.1 31.1	31.8 31.8	32.5 32.5	33.2 33.2	33.9 33.9	34.6 34.6	35.3 35.3	36.0 36.0	36.7 36.7	37.4 37.4	38.1 38.1	17
17	41.0 00.7	42.0 00.7	43.0 00.8	44.0 00.8	45.0 00.8	46.0 00.8	47.0 00.8	48.0 00.8	49.0 00.8	50.0 00.8	51.0 00.8	52.0 00.8	53.0 00.8	54.0 00.8	18
18	41.0 01.4	42.0 01.5	43.0 01.5	44.0 01.5	45.0 01.6	46.0 01.6	47.0 01.6	48.0 01.7	49.0 01.7	50.0 01.7	51.0 01.7	52.0 01.7	53.0 01.7	54.0 01.7	19
19	40.9 02.1	41.9 02.2	42.9 02.3	43.9 02.3	44.9 02.4	45.9 02.4	46.9 02.5	47.9 02.5	48.9 02.5	49.9 02.5	50.9 02.5	51.9 02.5	52.9 02.5	53.9 02.5	20
20	40.9 02.9	41.9 02.9	42.9 03.0	43.9 03.1	44.9 03.1	45.9 03.2	46.9 03.3	47.9 03.3	48.9 03.3	49.9 03.3	50.9 03.3	51.9 03.3	52.9 03.3	53.9 03.3	21
21	40.8 03.6	41.8 03.7	42.8 03.7	43.8 03.8	44.8 03.9	45.8 04.0	46.8 04.1	47.8 04.2	48.8 04.2	49.8 04.2	50.8 04.2	51.8 04.2	52.8 04.2	53.8 04.2	22
22	40.8 04.3	41.8 04.4	42.8 04.5	43.8 04.6	44.8 04.7	45.7 04.8	46.7 04.9	47.7 05.0	48.7 05.0	49.7 05.0	50.7 05.0	51.7 05.0	52.7 05.0	53.7 05.0	23
23	40.7 05.0	41.7 05.1	42.7 05.2	43.7 05.4	44.7 05.5	45.7 05.6	46.6 05.7	47.6 05.8	48.6 05.8	49.6 05.8	50.6 05.8	51.6 05.8	52.6 05.8	53.6 05.8	24
24	40.6 05.7	41.6 05.8	42.6 06.0	43.6 06.1	44.6 06.3	45.6 06.4	46.6 06.5	47.5 06.7	48.5 06.7	49.5 06.7	50.5 06.7	51.5 06.7	52.5 06.7	53.5 06.7	25
25	40.5 06.4	41.5 06.6	42.5 06.7	43.5 06.9	44.4 07.0	45.4 07.2	46.4 07.4	47.4 07.5	48.4 07.5	49.4 07.5	50.4 07.5	51.4 07.5	52.4 07.5	53.4 07.5	26
26	40.4 07.1	41.4 07.3	42.3 07.5	43.3 07.6	44.3 07.8	45.3 08.0	46.3 08.2	47.3 08.3	48.3 08.3	49.3 08.3	50.3 08.3	51.3 08.3	52.3 08.3	53.3 08.3	27
27	40.2 07.8	41.2 08.0	42.2 08.2	43.2 08.4	44.2 08.6	45.2 08.8	46.1 08.9	47.1 09.0	48.1 09.0	49.1 09.0	50.1 09.0	51.1 09.0	52.1 09.0	53.1 09.0	28
28	40.1 08.5	41.1 08.7	42.1 08.9	43.0 09.1	44.0 09.4	45.0 09.6	46.0 09.8	47.0 10.0	48.0 10.0	49.0 10.0	50.0 10.0	51.0 10.0	52.0 10.0	53.0 10.0	29
29	39.9 09.2	40.9 09.4	41.9 09.7	42.9 09.9	43.8 10.1	44.8 10.3	45.8 10.6	46.8 10.8	47.8 10.8	48.8 10.8	49.8 10.8	50.8 10.8	51.8 10.8	52.8 10.8	30
30	39.8 09.9	40.8 10.2	41.7 10.4	42.7 10.6	43.7 10.9	44.6 11.1	45.6 11.4	46.6 11.6	47.6 11.6	48.6 11.6	49.6 11.6	50.6 11.6	51.6 11.6	52.6 11.6	31
31	39.6 10.6	40.6 10.9	41.5 11.1	42.5 11.4	43.5 11.6	44.4 11.9	45.4 12.2	46.4 12.4	47.4 12.4	48.4 12.4	49.4 12.4	50.4 12.4	51.4 12.4	52.4 12.4	32
32	39.4 11.3	40.4 11.6	41.3 11.9	42.3 12.1	43.3 12.4	44.2 12.7	45.2 13.0	46.1 13.2	47.1 13.2	48.1 13.2	49.1 13.2	50.1 13.2	51.1 13.2	52.1 13.2	33
33	39.2 12.0	40.2 12.3	41.1 12.6	42.1 12.9	43.0 13.2	44.0 13.4	44.9 13.7	45.9 14.0	46.9 14.0	47.9 14.0	48.9 14.0	49.9 14.0	50.9 14.0	51.9 14.0	34
34	39.0 12.7	39.9 13.0	40.9 13.3	41.8 13.6	42.8 13.9	43.7 14.2	44.7 14.5	45.7 14.8	46.7 14.8	47.7 14.8	48.7 14.8	49.7 14.8	50.7 14.8	51.7 14.8	35
35	38.8 13.3	39.7 13.7	40.7 14.0	41.6 14.3	42.5 14.7	43.5 15.0	44.4 15.3	45.4 15.6	46.4 15.6	47.4 15.6	48.4 15.6	49.4 15.6	50.4 15.6	51.4 15.6	36
36	38.5 14.0	39.5 14.4	40.4 14.7	41.3 15.0	42.3 15.4	43.2 15.7	44.2 16.1	45.1 16.4	46.1 16.4	47.1 16.4	48.1 16.4	49.1 16.4	50.1 16.4	51.1 16.4	37
37	38.3 14.7	39.2 15.1	40.1 15.4	41.1 15.8	42.0 16.1	42.9 16.5	43.9 16.8	44.8 17.2	45.8 17.2	46.8 17.2	47.8 17.2	48.8 17.2	49.8 17.2	50.8 17.2	38
38	38.0 15.4	38.9 15.7	39.9 16.1	40.8 16.5	41.7 16.9	42.7 17.2	43.6 17.6	44.5 18.0	45.5 18.0	46.5 18.0	47.5 18.0	48.5 18.0	49.5 18.0	50.5 18.0	39
39	37.7 16.0	38.7 16.4	39.6 16.8	40.5 17.2	41.4 17.6	42.3 18.0	43.3 18.4	44.2 18.8	45.2 18.8	46.2 18.8	47.2 18.8	48.2 18.8	49.2 18.8	50.2 18.8	40
40	37.5 16.7	38.4 17.1	39.3 17.5	40.2 17.9	41.1 18.3	42.0 18.7	42.9 19.1	43.9 19.5	44.8 19.5	45.8 19.5	46.8 19.5	47.8 19.5	48.8 19.5	49.8 19.5	41
41	37.2 17.3	38.1 17.7	39.0 18.2	39.9 18.6	40.8 19.0	41.7 19.4	42.6 19.9	43.5 20.3	44.5 20.3	45.5 20.3	46.5 20.3	47.5 20.3	48.5 20.3	49.5 20.3	42
42	36.9 18.0	37.7 18.4	38.6 18.8	39.5 19.3	40.4 19.7	41.3 20.2	42.2 20.6	43.1 21.0	44.1 21.0	45.1 21.0	46.1 21.0	47.1 21.0	48.1 21.0	49.1 21.0	43
43	36.5 18.6	37.4 19.1	38.3 19.5	39.2 20.0	40.1 20.4	41.0 20.9	41.9 21.3	42.8 21.8	43.8 21.8	44.8 21.8	45.8 21.8	46.8 21.8	47.8 21.8	48.8 21.8	44
44	36.2 19.2	37.1 19.7	38.0 20.2	38.8 20.7	39.7 21.1	40.6 21.6	41.5 22.1	42.4 22.5	43.4 22.5	44.4 22.5	45.4 22.5	46.4 22.5	47.4 22.5	48.4 22.5	45
45	35.9 19.9	36.7 20.4	37.6 20.8	38.5 21.3	39.4 21.8	40.2 22.3	41.1 22.8	42.0 23.3	43.0 23.3	44.0 23.3	45.0 23.3	46.0 23.3	47.0 23.3	48.0 23.3	46
46	35.5 20.5	36.4 21.0	37.2 21.5	38.1 22.0	39.0 22.5	39.8 23.0	40.7 23.5	41.6 24.0	42.6 24.0	43.6 24.0	44.6 24.0	45.6 24.0	46.6 24.0	47.6 24.0	47
47	35.1 21.1	36.0 21.6	36.9 22.1	37.7 22.7	38.6 23.2	39.4 23.7	40.3 24.2	41.1 24.7	42.1 24.7	43.1 24.7	44.1 24.7	45.1 24.7	46.1 24.7	47.1 24.7	48
48	34.8 21.7	35.6 22.3	36.5 22.8	37.3 23.3	38.2 23.8	39.0 24.4	39.9 24.9	40.7 25.4	41.7 25.4	42.7 25.4	43.7 25.4	44.7 25.4	45.7 25.4	46.7 25.4	49
49	34.4 22.3	35.2 22.9	36.1 23.4	36.9 24.0	37.7 24.5	38.6 25.1	39.4 25.6	40.3 26.1	41.3 26.1	42.3 26.1	43.3 26.1	44.3 26.1	45.3 26.1	46.3 26.1	50
50	34.0 22.9	34.8 23.5	35.6 24.0	36.5 24.6	37.3 25.2	38.1 25.7	39.0 26.3	39.8 26.8	40.8 26.8	41.8 26.8	42.8 26.8	43.8 26.8	44.8 26.8	45.8 26.8	51
51	33.6 23.5	34.4 24.1	35.2 24.7	36.0 25.2	36.9 25.8	37.7 26.4	38.5 27.0	39.3 27.5	40.3 27.5	41.3 27.5	42.3 27.5	43.3 27.5	44.3 27.5	45.3 27.5	52
52	33.2 24.1	34.0 24.7	34.8 25.3	35.6 25.9	36.4 26.5	37.2 27.0	38.0 27.6	38.8 28.2	39.8 28.2	40.8 28.2	41.8 28.2	42.8 28.2	43.8 28.2	44.8 28.2	53
53	32.7 24.7	33.5 25.3	34.3 25.9	35.1 26.5	35.9 27.1	36.7 27.7	37.5 28.3	38.3 28.9	39.3 28.9	40.3 28.9	41.3 28.9	42.3 28.9	43.3 28.9	44.3 28.9	54
54	32.3 25.2	33.1 25.9	33.9 26.5	34.7 27.1	35.5 27.7	36.2 28.3	37.0 28.9	37.8 29.5	38.8 29.5	39.8 29.5	40.8 29.5	41.8 29.5	42.8 29.5	43.8 29.5	55
55	31.9 25.8	32.6 26.4	33.4 27.1	34.2 27.7	35.0 28.3	35.7 28.9	36.5 29.6	37.3 30.2	38.3 30.2	39.3 30.2	40.3 30.2	41.3 30.2	42.3 30.2	43.3 30.2	56
56	31.4 26.4	32.2 27.0	32.9 27.6	33.7 28.3											

Traverse Table.

(x.)

Distance. 49		50		51		52		53		54		55		56	
Course	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Course
1	48.9 02.4	49.9 02.5	50.9 02.5	51.9 02.6	52.9 02.6	53.9 02.7	54.9 02.7	55.9 02.8	56.9 02.8	57.9 02.8	58.9 02.8	59.9 02.8	60.9 02.8	61.9 02.8	2
2	48.8 04.8	49.8 04.9	50.8 05.0	51.7 05.1	52.7 05.2	53.7 05.3	54.7 05.4	55.7 05.5	56.7 05.5	57.7 05.5	58.7 05.5	59.7 05.5	60.7 05.5	61.7 05.5	3
3	48.5 07.2	49.5 07.3	50.4 07.5	51.4 07.6	52.4 07.8	53.4 07.9	54.4 08.1	55.4 08.2	56.4 08.2	57.4 08.2	58.4 08.2	59.4 08.2	60.4 08.2	61.4 08.2	4
4	48.1 09.6	49.0 09.8	50.0 10.0	51.0 10.1	52.0 10.3	53.0 10.5	53.9 10.7	54.9 10.9	55.9 10.9	56.9 10.9	57.9 10.9	58.9 10.9	59.9 10.9	60.9 10.9	5
5	47.5 11.9	48.5 12.2	49.5 12.4	50.4 12.6	51.4 12.9	52.4 13.1	53.4 13.4	54.3 13.6	55.3 13.6	56.3 13.6	57.3 13.6	58.3 13.6	59.3 13.6	60.3 13.6	6
6	46.9 14.2	47.9 14.5	48.8 14.8	49.8 15.1	50.7 15.4	51.7 15.7	52.6 16.0	53.6 16.3	54.6 16.3	55.6 16.3	56.6 16.3	57.6 16.3	58.6 16.3	59.6 16.3	7
7	46.1 16.5	47.1 16.8	48.0 17.2	49.0 17.5	49.9 17.9	50.8 18.2	51.8 18.5	52.7 18.9	53.7 18.9	54.7 18.9	55.7 18.9	56.7 18.9	57.7 18.9	58.7 18.9	8
8	45.3 18.8	46.2 19.1	47.1 19.5	48.0 19.9	49.0 20.3	49.9 20.7	50.8 21.0	51.7 21.4	52.7 21.4	53.7 21.4	54.7 21.4	55.7 21.4	56.7 21.4	57.7 21.4	9
9	44.3 21.0	45.2 21.4	46.1 21.8	47.0 22.2	47.9 22.7	48.8 23.1	49.7 23.5	50.6 23.9	51.6 23.9	52.6 23.9	53.6 23.9	54.6 23.9	55.6 23.9	56.6 23.9	10
10	43.2 23.1	44.1 23.6	45.0 24.0	45.9 24.5	46.7 25.0	47.6 25.5	48.5 25.9	49.4 26.4	50.4 26.4	51.4 26.4	52.4 26.4	53.4 26.4	54.4 26.4	55.4 26.4	11
11	42.0 25.2	42.9 25.7	43.7 26.2	44.6 26.7	45.5 27.2	46.3 27.8	47.2 28.3	48.0 28.8	49.0 28.8	50.0 28.8	51.0 28.8	52.0 28.8	53.0 28.8	54.0 28.8	12
12	40.7 27.2	41.6 27.8	42.4 28.3	43.2 28.9	44.1 29.4	44.9 30.0	45.7 30.6	46.6 31.1	47.6 31.1	48.6 31.1	49.6 31.1	50.6 31.1	51.6 31.1	52.6 31.1	13
13	39.4 29.2	40.2 29.8	41.0 30.4	41.8 31.0	42.6 31.6	43.4 32.2	44.2 32.8	45.0 33.4	46.0 33.4	47.0 33.4	48.0 33.4	49.0 33.4	50.0 33.4	51.0 33.4	14
14	37.9 31.1	38.6 31.7	39.4 32.3	40.2 33.0	41.0 33.6	41.7 34.3	42.5 34.9	43.3 35.5	44.3 35.5	45.3 35.5	46.3 35.5	47.3 35.5	48.3 35.5	49.3 35.5	15
15	36.3 32.9	37.0 33.6	37.8 34.2	38.5 34.9	39.3 35.6	40.0 36.3	40.7 36.9	41.5 37.6	42.5 37.6	43.5 37.6	44.5 37.6	45.5 37.6	46.5 37.6	47.5 37.6	16
16	34.6 34.6	35.4 35.4	36.1 36.1	36.8 36.8	37.5 37.5	38.2 38.2	38.9 38.9	39.6 39.6	40.6 39.6	41.6 39.6	42.6 39.6	43.6 39.6	44.6 39.6	45.6 39.6	17
17	49.0 00.9	50.0 00.9	51.0 00.9	52.0 00.9	53.0 00.9	54.0 00.9	55.0 01.0	56.0 01.0	57.0 01.0	58.0 01.0	59.0 01.0	60.0 01.0	61.0 01.0	62.0 01.0	18
18	49.0 01.7	50.0 01.7	51.0 01.8	52.0 01.8	53.0 01.8	54.0 01.9	55.0 01.9	56.0 02.0	57.0 02.0	58.0 02.0	59.0 02.0	60.0 02.0	61.0 02.0	62.0 02.0	19
19	48.9 02.6	49.9 02.6	50.9 02.7	51.9 02.7	52.9 02.8	53.9 02.8	54.9 02.9	55.9 02.9	56.9 02.9	57.9 02.9	58.9 02.9	59.9 02.9	60.9 02.9	61.9 02.9	20
20	48.9 03.4	49.9 03.5	50.9 03.6	51.9 03.6	52.9 03.7	53.9 03.8	54.9 03.8	55.9 03.9	56.9 03.9	57.9 03.9	58.9 03.9	59.9 03.9	60.9 03.9	61.9 03.9	21
21	48.8 04.3	49.8 04.4	50.8 04.4	51.8 04.5	52.8 04.6	53.8 04.7	54.8 04.8	55.8 04.9	56.8 04.9	57.8 04.9	58.8 04.9	59.8 04.9	60.8 04.9	61.8 04.9	22
22	48.7 05.1	49.7 05.2	50.7 05.3	51.7 05.4	52.7 05.5	53.7 05.6	54.7 05.7	55.7 05.9	56.7 05.9	57.7 05.9	58.7 05.9	59.7 05.9	60.7 05.9	61.7 05.9	23
23	48.6 06.0	49.6 06.1	50.6 06.2	51.6 06.3	52.6 06.5	53.6 06.6	54.6 06.7	55.6 06.8	56.6 06.8	57.6 06.8	58.6 06.8	59.6 06.8	60.6 06.8	61.6 06.8	24
24	48.5 06.8	49.5 07.0	50.5 07.1	51.5 07.2	52.5 07.4	53.5 07.5	54.5 07.7	55.5 07.8	56.5 07.8	57.5 07.8	58.5 07.8	59.5 07.8	60.5 07.8	61.5 07.8	25
25	48.4 07.7	49.4 07.8	50.4 08.0	51.4 08.1	52.3 08.3	53.3 08.4	54.3 08.6	55.3 08.8	56.3 08.8	57.3 08.8	58.3 08.8	59.3 08.8	60.3 08.8	61.3 08.8	26
26	48.3 08.5	49.2 08.7	50.2 08.9	51.2 09.0	52.0 09.2	53.2 09.4	54.2 09.6	55.1 09.7	56.1 09.7	57.1 09.7	58.1 09.7	59.1 09.7	60.1 09.7	61.1 09.7	27
27	48.1 09.3	49.1 09.5	50.1 09.7	51.0 09.9	52.0 10.1	53.0 10.3	54.0 10.5	55.0 10.7	56.0 10.7	57.0 10.7	58.0 10.7	59.0 10.7	60.0 10.7	61.0 10.7	28
28	47.9 10.2	48.9 10.4	49.9 10.6	50.9 10.8	51.8 11.0	52.8 11.2	53.8 11.4	54.8 11.6	55.8 11.6	56.8 11.6	57.8 11.6	58.8 11.6	59.8 11.6	60.8 11.6	29
29	47.7 11.0	48.7 11.2	49.7 11.5	50.7 11.7	51.6 11.9	52.6 12.1	53.6 12.4	54.6 12.6	55.6 12.6	56.6 12.6	57.6 12.6	58.6 12.6	59.6 12.6	60.6 12.6	30
30	47.5 11.9	48.5 12.1	49.5 12.3	50.5 12.6	51.4 12.8	52.4 13.1	53.4 13.3	54.3 13.5	55.3 13.5	56.3 13.5	57.3 13.5	58.3 13.5	59.3 13.5	60.3 13.5	31
31	47.3 12.7	48.3 12.9	49.3 13.2	50.2 13.5	51.2 13.7	52.2 14.0	53.1 14.2	54.1 14.5	55.1 14.5	56.1 14.5	57.1 14.5	58.1 14.5	59.1 14.5	60.1 14.5	32
32	47.1 13.5	48.1 13.8	49.0 14.1	50.0 14.3	50.9 14.6	51.9 14.9	52.9 15.2	53.8 15.4	54.8 15.4	55.8 15.4	56.8 15.4	57.8 15.4	58.8 15.4	59.8 15.4	33
33	46.9 14.3	47.8 14.6	48.8 14.9	49.7 15.2	50.7 15.5	51.6 15.8	52.6 16.1	53.6 16.4	54.6 16.4	55.6 16.4	56.6 16.4	57.6 16.4	58.6 16.4	59.6 16.4	34
34	46.6 15.1	47.6 15.5	48.5 15.8	49.5 16.1	50.4 16.4	51.4 16.7	52.3 17.0	53.3 17.3	54.3 17.3	55.3 17.3	56.3 17.3	57.3 17.3	58.3 17.3	59.3 17.3	35
35	46.3 16.0	47.3 16.3	48.2 16.6	49.2 16.9	50.1 17.3	51.1 17.6	52.0 17.9	52.9 18.2	53.9 18.2	54.9 18.2	55.9 18.2	56.9 18.2	57.9 18.2	58.9 18.2	36
36	46.0 16.8	47.0 17.1	47.9 17.4	48.9 17.8	49.8 18.1	50.7 18.5	51.7 18.8	52.6 19.2	53.6 19.2	54.6 19.2	55.6 19.2	56.6 19.2	57.6 19.2	58.6 19.2	37
37	45.7 17.6	46.7 17.9	47.6 18.3	48.5 18.6	49.5 19.0	50.4 19.4	51.3 19.7	52.3 20.1	53.3 20.1	54.3 20.1	55.3 20.1	56.3 20.1	57.3 20.1	58.3 20.1	38
38	45.4 18.4	46.4 18.7	47.3 19.1	48.2 19.5	49.1 19.9	50.1 20.2	51.0 20.6	51.9 21.0	52.9 21.0	53.9 21.0	54.9 21.0	55.9 21.0	56.9 21.0	57.9 21.0	39
39	45.1 19.1	46.0 19.5	46.9 19.9	47.9 20.3	48.8 20.7	49.7 21.1	50.6 21.5	51.5 21.9	52.5 21.9	53.5 21.9	54.5 21.9	55.5 21.9	56.5 21.9	57.5 21.9	40
40	44.8 19.9	45.7 20.3	46.6 20.7	47.5 21.2	48.4 21.6	49.3 22.0	50.2 22.4	51.2 22.8	52.2 22.8	53.2 22.8	54.2 22.8	55.2 22.8	56.2 22.8	57.2 22.8	41
41	44.4 20.7	45.3 21.1	46.2 21.6	47.1 22.0	48.0 22.4	48.9 22.8	49.8 23.2	50.8 23.6	51.8 23.6	52.8 23.6	53.8 23.6	54.8 23.6	55.8 23.6	56.8 23.6	42
42	44.0 21.5	44.9 21.9	45.8 22.4	46.7 22.8	47.6 23.2	48.5 23.7	49.4 24.1	50.3 24.5	51.3 24.5	52.3 24.5	53.3 24.5	54.3 24.5	55.3 24.5	56.3 24.5	43
43	43.7 22.2	44.6 22.7	45.4 23.2	46.3 23.6	47.2 24.1	48.1 24.5	49.0 25.0	49.9 25.4	50.9 25.4	51.9 25.4	52.9 25.4	53.9 25.4	54.9 25.4	55.9 25.4	44
44	43.3 23.0	44.1 23.5	45.0 23.9	45.9 24.4	46.8 24.8	47.7 25.4	48.6 25.8	49.4 26.3	50.4 26.3	51.4 26.3	52.4 26.3	53.4 26.3	54.4 26.3	55.4 26.3	45
45	42.9 23.8	43.7 24.2	44.6 24.7	45.5 25.2	46.4 25.7	47.2 26.2	48.1 26.7	49.0 27.1	50.0 27.1	51.0 27.1	52.0 27.1	53.0 27.1	54.0 27.1	55.0 27.1	46
46	42.4 24.5	43.3 25.0	44.2 25.5	45.0 26.0	45.9 26.5	46.8 27.0	47.6 27.5	48.5 28.0	49.5 28.0	50.5 28.0	51.5 28.0	52.5 28.0	53.5 28.0	54.5 28.0	47
47	42.0 25.2	42.9 25.8	43.7 26.3	44.6 26.8	45.4 27.3	46.3 27.8	47.1 28.3	48.0 28.8	49.0 28.8	50.0 28.8	51.0 28.8	52.0 28.8	53.0 28.8	54.0 28.8	48
48	41.6 26.0	42.4 26.5	43.3 27.0	44.1 27.6	44.9 28.1	45.8 28.6	46.6 29.1	47.5 29.7	48.5 29.7	49.5 29.7	50.5 29.7	51.5 29.7	52.5 29.7	53.5 29.7	49
49	41.1 26.7	41.9 27.2	42.8 27.8	43.6 28.3	44.4 28.9	45.3 29.4	46.1 30.0	47.0 30.5	48.0 30.5	49.0 30.5	50.0 30.5	51.0 30.5	52.0 30.5	53.0 30.5	50
50	40.6 27.4	41.5 28.0	42.3 28.5	43.1 29.1	43.9 29.6	44.8 30.2	45.6 30.8	46.4 31.3	47.4 31.3	48.4 31.3	49.4 31.3	50.4 31.3	51.4 31.3	52.4 31.3	51
51	40.1 28.1	41.0 28.7	41.8 29.3	42.6 29.8	43.4 30.4	44.2 31.0	45.1 31.5	45.9 32.1	46.9 32.1	47.9 32.1	48.9 32.1	49.9 32.1	50.9 32.1	51.9 32.1	52
52	39.6 28.8	40.5 29.4	41.3 30.0	42.1 30.6	42.9 31.2	43.7 31.7	44.5 32.3	45.3 32.9	46.3 32.9	47.3 32.9	48.3 32.9	49.3 32.9	50.3 32.9	51.3 32.9	53
53	39.1 29.5	39.9 30.1	40.7 30.7	41.5 31.3	42.3 31.9	43.1 32.5	43.9 33.1	44.7 33.7	45.7 33.7	46.7 33.7	47.7 33.7	48.7 33.7	49.7 33.7	50.7 33.7	54
54	38.6 30.2	39.4 30.8	40.2 31.4	41.0 32.0	41.8 32.6	42.6 33.2	43.3 33.9	44.1 34.5	45.1 34.5	46.1 34.5	47.1 34.5	48.1 34.5	49.1 34.5	50.1 34.5	55
55	38.1 30.8	38.9 31.5	39.6 32.1	40.4 32.7	41.2 33.4	42.0 34.0	42.7 34.6	43.5 35.2	44.5 35.2	45.5 35.2	46.5 35.2	47.5 35.2	48.5 35.2	49.5 35.2	56
56	37.5 31.5	38.3 32.1	39.1 32.8	39.8 33.4</											

Traverse Table.

(x.)

Distance. 57		58		59		60		61		62		63		64	
Course	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Course
1	56.9 02.8	57.9 02.9	58.9 02.9	59.9 02.9	60.9 03.0	61.9 03.0	62.9 03.1	63.9 03.1	64.9 03.1	65.9 03.1	66.9 03.1	67.9 03.1	68.9 03.1	69.9 03.1	70
2	56.7 05.6	57.7 05.7	58.7 05.8	59.7 05.9	60.7 06.0	61.7 06.1	62.7 06.2	63.7 06.3	64.7 06.3	65.7 06.3	66.7 06.3	67.7 06.3	68.7 06.3	69.7 06.3	71
3	56.4 08.4	57.4 08.5	58.4 08.7	59.4 08.8	60.4 08.9	61.4 09.1	62.4 09.2	63.4 09.4	64.4 09.5	65.4 09.6	66.4 09.7	67.4 09.8	68.4 09.9	69.4 10.0	72
4	55.9 11.1	56.9 11.3	57.9 11.5	58.8 11.7	59.8 11.9	60.8 12.1	61.8 12.3	62.8 12.5	63.8 12.7	64.8 12.9	65.8 13.1	66.8 13.3	67.8 13.5	68.8 13.7	73
5	55.3 13.9	56.3 14.1	57.2 14.3	58.2 14.6	59.2 14.8	60.1 15.1	61.1 15.3	62.1 15.6	63.1 15.8	64.1 16.1	65.1 16.3	66.1 16.6	67.1 16.8	68.1 17.1	74
6	54.5 16.5	55.5 16.8	56.5 17.1	57.4 17.4	58.4 17.7	59.3 18.0	60.3 18.3	61.2 18.6	62.2 18.9	63.2 19.2	64.2 19.5	65.2 19.8	66.2 20.1	67.2 20.4	75
7	53.7 19.2	54.6 19.5	55.5 19.9	56.5 20.2	57.4 20.5	58.4 20.9	59.3 21.2	60.3 21.6	61.3 21.9	62.3 22.3	63.3 22.6	64.3 23.0	65.3 23.3	66.3 23.7	76
8	52.7 21.8	53.6 22.2	54.5 22.6	55.4 23.0	56.4 23.3	57.3 23.7	58.2 24.1	59.1 24.5	60.1 24.9	61.1 25.3	62.1 25.7	63.1 26.1	64.1 26.5	65.1 26.9	77
9	51.5 24.4	52.4 24.8	53.3 25.2	54.2 25.7	55.1 26.1	56.0 26.5	57.0 26.9	57.9 27.4	58.9 27.8	59.9 28.3	60.9 28.7	61.9 29.2	62.9 29.6	63.9 30.1	78
10	50.3 26.9	51.2 27.3	52.0 27.8	52.9 28.3	53.8 28.8	54.7 29.2	55.6 29.7	56.4 30.2	57.4 30.7	58.4 31.2	59.4 31.7	60.4 32.2	61.4 32.7	62.4 33.2	79
11	48.9 29.3	49.7 29.8	50.6 30.3	51.5 30.8	52.3 31.4	53.2 31.9	54.0 32.4	54.9 32.9	55.8 33.4	56.7 33.9	57.6 34.4	58.5 34.9	59.4 35.4	60.3 35.9	80
12	47.4 31.7	48.2 32.2	49.1 32.8	49.9 33.3	50.7 33.9	51.5 34.4	52.4 35.0	53.2 35.6	54.1 36.1	55.0 36.7	55.9 37.2	56.8 37.7	57.7 38.2	58.6 38.7	81
13	45.8 34.0	46.6 34.6	47.4 35.1	48.2 35.7	49.0 36.3	49.8 36.9	50.6 37.5	51.4 38.1	52.3 38.7	53.1 39.3	54.0 39.9	54.9 40.5	55.8 41.1	56.7 41.7	82
14	44.1 36.2	44.8 36.9	45.6 37.4	46.4 38.1	47.1 38.7	47.9 39.3	48.7 40.0	49.5 40.6	50.3 41.3	51.1 42.0	51.9 42.7	52.7 43.4	53.5 44.1	54.3 44.8	83
15	42.2 38.3	43.0 38.9	43.7 39.6	44.5 40.3	45.2 41.0	45.9 41.6	46.7 42.3	47.4 43.0	48.2 43.7	49.0 44.4	49.8 45.1	50.6 45.8	51.4 46.5	52.2 47.2	84
16	40.3 40.3	41.0 41.0	41.7 41.7	42.4 42.4	43.1 43.1	43.8 43.8	44.5 44.5	45.3 45.3	46.0 46.0	46.8 46.8	47.5 47.5	48.3 48.3	49.0 49.0	49.8 49.8	85
17	57.0 01.0	58.0 01.0	59.0 01.0	60.0 01.0	61.0 01.0	62.0 01.1	63.0 01.1	64.0 01.1	65.0 01.1	66.0 01.1	67.0 01.1	68.0 01.1	69.0 01.1	70.0 01.1	86
18	57.0 02.0	58.0 02.0	59.0 02.1	60.0 02.1	61.0 02.1	62.0 02.2	63.0 02.2	64.0 02.2	65.0 02.2	66.0 02.2	67.0 02.2	68.0 02.2	69.0 02.2	70.0 02.2	87
19	56.9 03.0	57.9 03.0	58.9 03.1	59.9 03.1	60.9 03.2	61.9 03.2	62.9 03.3	63.9 03.3	64.9 03.3	65.9 03.3	66.9 03.3	67.9 03.3	68.9 03.3	69.9 03.3	88
20	56.9 04.0	57.9 04.0	58.9 04.1	59.9 04.2	60.9 04.3	61.8 04.3	62.8 04.4	63.8 04.5	64.8 04.5	65.8 04.5	66.8 04.5	67.8 04.5	68.8 04.5	69.8 04.5	89
21	56.8 05.0	57.8 05.1	58.8 05.1	59.8 05.2	60.8 05.3	61.8 05.4	62.8 05.5	63.8 05.6	64.8 05.6	65.8 05.6	66.8 05.6	67.8 05.6	68.8 05.6	69.8 05.6	90
22	56.7 06.0	57.7 06.1	58.7 06.2	59.7 06.3	60.7 06.4	61.7 06.5	62.7 06.6	63.6 06.7	64.6 06.7	65.6 06.7	66.6 06.7	67.6 06.7	68.6 06.7	69.6 06.7	91
23	56.6 06.9	57.6 07.1	58.6 07.2	59.6 07.3	60.5 07.4	61.5 07.6	62.5 07.7	63.5 07.8	64.5 07.8	65.5 07.8	66.5 07.8	67.5 07.8	68.5 07.8	69.5 07.8	92
24	56.4 07.9	57.4 08.1	58.4 08.2	59.4 08.4	60.4 08.5	61.4 08.6	62.4 08.8	63.4 08.9	64.4 09.0	65.4 09.0	66.4 09.0	67.4 09.0	68.4 09.0	69.4 09.0	93
25	56.3 08.9	57.3 09.1	58.3 09.2	59.3 09.4	60.2 09.5	61.2 09.7	62.2 09.9	63.2 10.0	64.2 10.1	65.2 10.1	66.2 10.1	67.2 10.1	68.2 10.1	69.2 10.1	94
26	56.1 09.9	57.1 10.1	58.1 10.2	59.1 10.4	60.1 10.6	61.1 10.8	62.0 10.9	63.0 11.1	64.0 11.1	65.0 11.1	66.0 11.1	67.0 11.1	68.0 11.1	69.0 11.1	95
27	56.0 10.9	56.9 11.1	57.9 11.3	58.9 11.4	59.9 11.6	60.9 11.8	61.8 12.0	62.8 12.2	63.8 12.2	64.8 12.2	65.8 12.2	66.8 12.2	67.8 12.2	68.8 12.2	96
28	55.8 11.9	56.7 12.1	57.7 12.3	58.7 12.5	59.7 12.7	60.6 12.9	61.6 13.1	62.6 13.3	63.6 13.3	64.6 13.3	65.6 13.3	66.6 13.3	67.6 13.3	68.6 13.3	97
29	55.5 12.8	56.5 13.0	57.5 13.3	58.5 13.5	59.4 13.7	60.4 13.9	61.4 14.2	62.4 14.4	63.4 14.4	64.4 14.4	65.4 14.4	66.4 14.4	67.4 14.4	68.4 14.4	98
30	55.3 13.8	56.3 14.0	57.2 14.3	58.2 14.5	59.2 14.8	60.2 15.0	61.1 15.2	62.1 15.5	63.1 15.5	64.1 15.5	65.1 15.5	66.1 15.5	67.1 15.5	68.1 15.5	99
31	55.1 14.8	56.0 15.0	57.0 15.3	58.0 15.5	58.9 15.8	59.9 16.0	60.9 16.3	61.8 16.6	62.8 16.6	63.8 16.6	64.8 16.6	65.8 16.6	66.8 16.6	67.8 16.6	100
32	54.8 15.7	55.8 16.0	56.7 16.3	57.7 16.5	58.6 16.8	59.6 17.1	60.6 17.4	61.5 17.6	62.5 17.6	63.5 17.6	64.5 17.6	65.5 17.6	66.5 17.6	67.5 17.6	101
33	54.5 16.7	55.5 17.0	56.4 17.2	57.4 17.5	58.3 17.8	59.3 18.1	60.2 18.4	61.2 18.7	62.2 18.7	63.2 18.7	64.2 18.7	65.2 18.7	66.2 18.7	67.2 18.7	102
34	54.2 17.6	55.2 17.9	56.1 18.2	57.1 18.5	58.0 18.9	59.0 19.2	59.9 19.5	60.9 19.8	61.9 19.8	62.9 19.8	63.9 19.8	64.9 19.8	65.9 19.8	66.9 19.8	103
35	53.9 18.6	54.8 18.9	55.8 19.2	56.7 19.5	57.7 19.9	58.6 20.2	59.6 20.5	60.5 20.8	61.5 20.8	62.5 20.8	63.5 20.8	64.5 20.8	65.5 20.8	66.5 20.8	104
36	53.6 19.5	54.5 19.8	55.4 20.2	56.4 20.5	57.3 20.9	58.3 21.2	59.2 21.5	60.1 21.9	61.1 21.9	62.1 21.9	63.1 21.9	64.1 21.9	65.1 21.9	66.1 21.9	105
37	53.2 20.4	54.1 20.8	55.1 21.1	56.0 21.5	56.9 21.9	57.9 22.2	58.8 22.6	59.7 22.9	60.7 22.9	61.7 22.9	62.7 22.9	63.7 22.9	64.7 22.9	65.7 22.9	106
38	52.8 21.4	53.8 21.7	54.7 22.1	55.6 22.5	56.6 22.9	57.5 23.2	58.4 23.6	59.3 24.0	60.3 24.0	61.3 24.0	62.3 24.0	63.3 24.0	64.3 24.0	65.3 24.0	107
39	52.5 22.3	53.4 22.7	54.3 23.1	55.2 23.4	56.2 23.8	57.1 24.2	58.0 24.6	58.9 25.0	59.9 25.0	60.9 25.0	61.9 25.0	62.9 25.0	63.9 25.0	64.9 25.0	108
40	52.1 23.2	53.0 23.6	53.9 24.0	54.8 24.4	55.7 24.8	56.6 25.2	57.5 25.6	58.4 26.0	59.4 26.0	60.4 26.0	61.4 26.0	62.4 26.0	63.4 26.0	64.4 26.0	109
41	51.7 24.1	52.6 24.5	53.5 24.9	54.4 25.4	55.3 25.8	56.2 26.2	57.1 26.6	58.0 27.0	59.0 27.0	60.0 27.0	61.0 27.0	62.0 27.0	63.0 27.0	64.0 27.0	110
42	51.2 25.0	52.1 25.4	53.0 25.9	53.9 26.3	54.8 26.7	55.7 27.2	56.6 27.6	57.5 28.1	58.5 28.1	59.5 28.1	60.5 28.1	61.5 28.1	62.5 28.1	63.5 28.1	111
43	50.8 25.9	51.7 26.3	52.6 26.8	53.5 27.2	54.4 27.7	55.2 28.1	56.1 28.6	57.0 29.1	58.0 29.1	59.0 29.1	60.0 29.1	61.0 29.1	62.0 29.1	63.0 29.1	112
44	50.3 26.8	51.2 27.2	52.1 27.7	53.0 28.2	53.9 28.6	54.7 29.1	55.6 29.6	56.5 30.0	57.5 30.0	58.5 30.0	59.5 30.0	60.5 30.0	61.5 30.0	62.5 30.0	113
45	49.9 27.6	50.7 28.1	51.6 28.6	52.5 29.1	53.4 29.6	54.2 30.1	55.1 30.5	56.0 31.0	57.0 31.0	58.0 31.0	59.0 31.0	60.0 31.0	61.0 31.0	62.0 31.0	114
46	49.4 28.5	50.2 29.0	51.1 29.5	52.0 30.0	52.8 30.5	53.7 31.0	54.6 31.5	55.4 32.0	56.4 32.0	57.4 32.0	58.4 32.0	59.4 32.0	60.4 32.0	61.4 32.0	115
47	48.9 29.4	49.7 29.9	50.6 30.4	51.4 30.9	52.3 31.4	53.1 31.9	54.0 32.4	54.9 33.0	55.9 33.0	56.9 33.0	57.9 33.0	58.9 33.0	59.9 33.0	60.9 33.0	116
48	48.3 30.2	49.2 30.7	50.0 31.3	50.9 31.8	51.7 32.3	52.6 32.9	53.4 33.4	54.3 33.9	55.3 33.9	56.3 33.9	57.3 33.9	58.3 33.9	59.3 33.9	60.3 33.9	117
49	47.8 31.0	48.6 31.6	49.5 32.1	50.3 32.7	51.2 33.2	52.0 33.8	52.8 34.3	53.7 34.9	54.7 34.9	55.7 34.9	56.7 34.9	57.7 34.9	58.7 34.9	59.7 34.9	118
50	47.3 31.9	48.1 32.4	48.9 33.0	49.7 33.6	50.6 34.1	51.4 34.7	52.2 35.2	53.1 35.8	54.1 35.8	55.1 35.8	56.1 35.8	57.1 35.8	58.1 35.8	59.1 35.8	119
51	46.7 32.7	47.5 33.3	48.3 33.8	49.1 34.4	50.0 35.0	50.8 35.6	51.6 36.1	52.4 36.7	53.4 36.7	54.4 36.7	55.4 36.7	56.4 36.7	57.4 36.7	58.4 36.7	120
52	46.1 33.5	46.9 34.1	47.7 34.7	48.5 35.3	49.4 35.9	50.2 36.4	51.0 37.0	51.8 37.6	52.8 37.6	53.8 37.6	54.8 37.6	55.8 37.6	56.8 37.6	57.8 37.6	121
53	45.5 34.3	46.3 34.9	47.1 35.5	47.9 36.1	48.7 36.7	49.5 37.3	50.3 37.9	51.1 38.5	52.1 38.5	53.1 38.5	54.1 38.5	55.1 38.5	56.1 38.5	57.1 38.5	122
54	44.9 35.1	45.7 35.7	46.5 36.3	47.3 36.9	48.1 37.6	48.9 38.2	49.6 38.8	50.4 39.4	51.4 39.4	52.4 39.4	53.4 39.4	54.4 39.4	55.4 39.4	56.4 39.4	123
55	44.3 35.9	45.1 36.5	45.9 37.1	46.6 37.8	47.4 38.4	48.2 39.0	49.0 39.6	49.7 40.3	50.7 40.3	51.7 40.3	52.7 40.3	53.7 40.3	54.7 40.3		

Traverse Table.

(x.)

Distance. 65		66		67		68		69		70		71		72	
Crs.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Crs.
1	64.9 03.2 64.7 06.4 64.3 09.5 63.7 12.7 63.1 15.8 62.2 18.9 61.2 21.9 60.1 24.9	65.9 03.2 65.7 06.5 65.3 09.7 64.7 12.9 64.0 16.0 63.2 19.2 62.1 22.2 61.0 25.3	66.9 03.3 66.7 06.6 66.3 09.8 65.7 13.1 65.0 16.3 64.1 19.4 63.1 22.6 61.9 25.6	67.9 03.3 67.7 06.7 67.3 10.0 66.7 13.3 66.0 16.5 65.1 19.7 64.0 22.9 62.8 26.0	68.9 03.4 68.7 06.8 68.2 10.1 67.7 13.5 66.9 16.8 66.0 20.0 65.0 23.2 63.8 26.4	69.9 03.4 69.7 06.9 69.2 10.3 68.7 13.7 67.9 17.0 67.0 20.3 65.9 23.6 64.7 26.8	70.9 03.5 70.7 07.0 70.2 10.4 69.6 13.9 68.9 17.3 67.9 20.6 66.8 23.9 65.6 27.2	71.9 03.5 71.7 07.1 71.2 10.5 70.6 14.0 69.8 17.5 68.9 20.9 67.8 24.3 66.5 27.6	72.9 03.5 72.7 07.1 72.2 10.5 71.6 14.0 70.8 17.5 69.9 20.9 68.8 24.3 67.6 27.6	73.9 03.5 73.7 07.1 73.2 10.5 72.6 14.0 71.8 17.5 70.9 20.9 69.8 24.3 68.6 27.6	74.9 03.5 74.7 07.1 74.2 10.5 73.6 14.0 72.8 17.5 71.9 20.9 70.8 24.3 69.6 27.6	75.9 03.5 75.7 07.1 75.2 10.5 74.6 14.0 73.8 17.5 72.9 20.9 71.8 24.3 70.6 27.6	76.9 03.5 76.7 07.1 76.2 10.5 75.6 14.0 74.8 17.5 73.9 20.9 72.8 24.3 71.6 27.6	77.9 03.5 77.7 07.1 77.2 10.5 76.6 14.0 75.8 17.5 74.9 20.9 73.8 24.3 72.6 27.6	78.9 03.5 78.7 07.1 78.2 10.5 77.6 14.0 76.8 17.5 75.9 20.9 74.8 24.3 73.6 27.6
2	58.8 27.8 57.3 30.6 55.8 33.4 54.0 36.1 52.2 38.7 50.2 41.2 48.2 43.6 46.0 46.0	59.7 28.2 58.2 31.1 56.6 33.9 54.9 36.7 53.0 39.3 51.0 41.9 48.9 44.3 46.7 46.7	60.6 28.6 59.1 31.6 57.5 34.4 55.7 37.2 53.8 39.9 51.8 42.5 49.6 45.0 47.4 47.4	61.5 29.1 60.0 32.1 58.3 35.0 56.5 37.8 54.6 40.5 52.6 43.1 50.4 45.7 48.1 48.1	62.4 29.5 60.9 32.5 59.2 35.5 57.4 38.3 55.4 41.1 53.3 43.8 51.1 46.3 48.8 48.8	63.3 29.9 61.7 33.0 60.0 36.0 58.2 38.9 56.2 41.7 54.1 44.4 51.9 47.0 49.5 49.5	64.2 30.4 62.6 33.5 60.9 36.5 59.0 39.4 57.0 42.3 54.9 45.0 52.6 47.7 50.2 50.2	65.1 30.8 63.5 33.9 61.8 37.0 59.9 40.0 57.8 42.9 55.7 45.7 53.3 48.3 50.9 50.9	66.1 31.2 64.5 34.3 62.8 37.3 60.9 40.2 58.8 43.1 56.7 45.9 54.4 48.6 52.0 51.2	67.1 31.6 65.5 34.7 63.8 37.7 61.9 40.6 59.8 43.5 57.7 46.3 55.4 49.0 53.0 51.6	68.1 32.0 66.5 35.1 64.8 38.1 62.9 41.0 60.8 43.9 58.7 46.7 56.4 49.4 54.0 52.0	69.1 32.4 67.5 35.5 65.8 38.5 63.9 41.4 61.8 44.3 59.7 47.1 57.4 49.8 55.0 52.6	70.1 32.8 68.5 35.9 66.8 38.9 64.9 41.8 62.8 44.7 60.7 47.5 58.4 50.2 56.0 52.8	71.1 33.2 69.5 36.3 67.8 39.3 65.9 42.2 63.8 45.1 61.7 47.9 59.4 50.6 57.0 53.2	72.1 33.6 70.5 36.7 68.8 39.7 66.9 42.6 64.8 45.5 62.7 48.3 60.4 51.0 58.0 53.6
3	54.0 36.1 52.2 38.7 50.2 41.2 48.2 43.6 46.0 46.0	54.9 36.7 53.0 39.3 51.0 41.9 48.9 44.3 46.7 46.7	55.7 37.2 53.8 39.9 51.8 42.5 49.6 45.0 47.4 47.4	56.5 37.8 54.6 40.5 52.6 43.1 50.4 45.7 48.1 48.1	57.4 38.3 55.4 41.1 53.3 43.8 51.1 46.3 48.8 48.8	58.2 38.9 56.2 41.7 54.1 44.4 51.9 47.0 49.5 49.5	59.0 39.4 57.0 42.3 54.9 45.0 52.6 47.7 50.2 50.2	59.9 39.9 57.8 42.9 55.7 45.7 53.3 48.3 50.9 50.9	60.9 40.4 58.8 43.5 56.7 46.3 54.4 49.0 52.0 51.6	61.9 40.8 59.8 43.9 57.7 46.7 55.4 49.4 53.0 52.0	62.9 41.2 60.8 44.3 58.7 47.1 56.4 49.8 54.0 52.4	63.9 41.6 61.8 44.7 59.7 47.5 57.4 50.2 55.0 52.8	64.9 42.0 62.8 45.1 60.7 47.9 58.4 50.6 56.0 53.2	65.9 42.4 63.8 45.5 61.7 48.3 59.4 51.0 57.0 53.6	66.9 42.8 64.8 45.9 62.7 48.7 60.4 51.4 58.0 54.0
4	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
5	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
6	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
7	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
8	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
9	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
10	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
11	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
12	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
13	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
14	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
15	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
16	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
17	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
18	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
19	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
20	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
21	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
22	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
23	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
24	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
25	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
26	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
27	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
28	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
29	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
30	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
31	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
32	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
33	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
34	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
35	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
36	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
37	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
38	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
39	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
40	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
41	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
42	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5	50.2 50.2	50.9 50.9	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.1 55.1	
43	46.0 46.0	46.7 46.7	47.4 47.4	48.1 48.1	48.8 48.8	49.5 49.5									

Traverse Table.

(x.)

Distance. 73		74		75		76		77		78		79		80	
Crs.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Crs.
1	72.9 03.6	73.9 03.6	74.9 03.7	75.9 03.7	76.9 03.8	77.9 03.8	78.9 03.9	79.9 03.9	72.9 03.6	73.9 03.6	74.9 03.7	75.9 03.7	76.9 03.8	77.9 03.8	78.9 03.9
2	72.6 07.2	73.6 07.3	74.6 07.4	75.6 07.4	76.6 07.5	77.6 07.6	78.6 07.7	79.6 07.8	72.6 07.2	73.6 07.3	74.6 07.4	75.6 07.4	76.6 07.5	77.6 07.6	78.6 07.7
3	72.2 10.7	73.2 10.9	74.2 11.0	75.2 11.1	76.2 11.3	77.2 11.4	78.1 11.6	79.1 11.7	72.2 10.7	73.2 10.9	74.2 11.0	75.2 11.1	76.2 11.3	77.2 11.4	78.1 11.6
4	71.6 14.2	72.6 14.4	73.6 14.6	74.5 14.8	75.5 15.0	76.5 15.2	77.5 15.4	78.5 15.6	71.6 14.2	72.6 14.4	73.6 14.6	74.5 14.8	75.5 15.0	76.5 15.2	77.5 15.4
5	70.8 17.7	71.8 18.0	72.8 18.2	73.7 18.5	74.7 18.7	75.7 19.0	76.6 19.2	77.6 19.4	70.8 17.7	71.8 18.0	72.8 18.2	73.7 18.5	74.7 18.7	75.7 19.0	76.6 19.2
6	69.9 21.2	70.8 21.5	71.8 21.8	72.7 22.1	73.7 22.3	74.6 22.6	75.6 22.9	76.6 23.2	69.9 21.2	70.8 21.5	71.8 21.8	72.7 22.1	73.7 22.3	74.6 22.6	75.6 22.9
7	68.7 24.6	69.7 24.9	70.6 25.3	71.6 25.6	72.5 25.9	73.4 26.3	74.4 26.6	75.3 26.9	68.7 24.6	69.7 24.9	70.6 25.3	71.6 25.6	72.5 25.9	73.4 26.3	74.4 26.6
8	67.4 27.9	68.4 28.3	69.3 28.7	70.2 29.1	71.1 29.5	72.1 29.9	73.0 30.2	73.9 30.6	67.4 27.9	68.4 28.3	69.3 28.7	70.2 29.1	71.1 29.5	72.1 29.9	73.0 30.2
9	66.0 31.2	66.9 31.6	67.8 32.1	68.7 32.5	69.6 32.9	70.5 33.4	71.4 33.8	72.3 34.2	66.0 31.2	66.9 31.6	67.8 32.1	68.7 32.5	69.6 32.9	70.5 33.4	71.4 33.8
10	64.4 34.4	65.3 34.8	66.1 35.4	67.0 35.8	67.9 36.3	68.8 36.8	69.7 37.2	70.6 37.7	64.4 34.4	65.3 34.8	66.1 35.4	67.0 35.8	67.9 36.3	68.8 36.8	69.7 37.2
11	62.6 37.5	63.5 38.0	64.3 38.6	65.2 39.1	66.0 39.6	66.9 40.1	67.8 40.6	68.6 41.1	62.6 37.5	63.5 38.0	64.3 38.6	65.2 39.1	66.0 39.6	66.9 40.1	67.8 40.6
12	60.7 40.6	61.5 41.1	62.4 41.7	63.2 42.2	64.0 42.8	64.8 43.3	65.7 43.9	66.5 44.4	60.7 40.6	61.5 41.1	62.4 41.7	63.2 42.2	64.0 42.8	64.8 43.3	65.7 43.9
13	58.6 43.5	59.4 44.1	60.2 44.7	61.0 45.3	61.8 45.9	62.6 46.5	63.4 47.1	64.3 47.7	58.6 43.5	59.4 44.1	60.2 44.7	61.0 45.3	61.8 45.9	62.6 46.5	63.4 47.1
14	56.4 46.3	57.2 46.9	58.0 47.6	58.7 48.2	59.5 48.8	60.3 49.5	61.1 50.1	61.8 50.7	56.4 46.3	57.2 46.9	58.0 47.6	58.7 48.2	59.5 48.8	60.3 49.5	61.1 50.1
15	54.1 49.0	54.8 49.7	55.6 50.4	56.3 51.0	57.0 51.7	57.8 52.4	58.5 53.0	59.3 53.7	54.1 49.0	54.8 49.7	55.6 50.4	56.3 51.0	57.0 51.7	57.8 52.4	58.5 53.0
16	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.2 55.2	55.9 55.9	56.6 56.6	51.6 51.6	52.3 52.3	53.0 53.0	53.7 53.7	54.4 54.4	55.2 55.2	55.9 55.9
17	73.0 01.3	74.0 01.3	75.0 01.3	76.0 01.3	77.0 01.3	78.0 01.4	79.0 01.4	80.0 01.4	73.0 01.3	74.0 01.3	75.0 01.3	76.0 01.3	77.0 01.3	78.0 01.4	79.0 01.4
18	73.0 02.5	74.0 02.6	75.0 02.6	76.0 02.7	77.0 02.7	78.0 02.7	79.0 02.8	80.0 02.8	73.0 02.5	74.0 02.6	75.0 02.6	76.0 02.7	77.0 02.7	78.0 02.7	79.0 02.8
19	72.9 03.8	73.9 03.9	74.9 03.9	75.9 04.0	76.9 04.0	77.9 04.1	78.9 04.1	79.9 04.2	72.9 03.8	73.9 03.9	74.9 03.9	75.9 04.0	76.9 04.0	77.9 04.1	78.9 04.1
20	72.8 05.1	73.8 05.2	74.8 05.2	75.8 05.3	76.8 05.4	77.8 05.4	78.8 05.5	79.8 05.6	72.8 05.1	73.8 05.2	74.8 05.2	75.8 05.3	76.8 05.4	77.8 05.4	78.8 05.5
21	72.7 06.4	73.7 06.4	74.7 06.5	75.7 06.6	76.7 06.7	77.7 06.8	78.7 06.9	79.7 07.0	72.7 06.4	73.7 06.4	74.7 06.5	75.7 06.6	76.7 06.7	77.7 06.8	78.7 06.9
22	72.6 07.6	73.6 07.7	74.6 07.8	75.6 07.9	76.6 08.0	77.6 08.2	78.6 08.3	79.6 08.4	72.6 07.6	73.6 07.7	74.6 07.8	75.6 07.9	76.6 08.0	77.6 08.2	78.6 08.3
23	72.5 08.9	73.4 09.0	74.4 09.1	75.4 09.3	76.4 09.4	77.4 09.5	78.4 09.6	79.4 09.7	72.5 08.9	73.4 09.0	74.4 09.1	75.4 09.3	76.4 09.4	77.4 09.5	78.4 09.6
24	72.3 10.2	73.3 10.3	74.3 10.4	75.3 10.6	76.3 10.7	77.2 10.9	78.2 11.0	79.2 11.1	72.3 10.2	73.3 10.3	74.3 10.4	75.3 10.6	76.3 10.7	77.2 10.9	78.2 11.0
25	72.1 11.4	73.1 11.6	74.1 11.7	75.1 11.9	76.1 12.0	77.0 12.2	78.0 12.4	79.0 12.5	72.1 11.4	73.1 11.6	74.1 11.7	75.1 11.9	76.1 12.0	77.0 12.2	78.0 12.4
26	71.9 12.7	72.9 12.8	73.9 13.0	74.8 13.2	75.8 13.4	76.8 13.5	77.8 13.7	78.8 13.9	71.9 12.7	72.9 12.8	73.9 13.0	74.8 13.2	75.8 13.4	76.8 13.5	77.8 13.7
27	71.7 13.9	72.6 14.1	73.6 14.3	74.6 14.5	75.6 14.7	76.6 14.9	77.5 15.1	78.5 15.3	71.7 13.9	72.6 14.1	73.6 14.3	74.6 14.5	75.6 14.7	76.6 14.9	77.5 15.1
28	71.4 15.2	72.4 15.4	73.4 15.6	74.3 15.8	75.3 16.0	76.3 16.2	77.3 16.4	78.3 16.6	71.4 15.2	72.4 15.4	73.4 15.6	74.3 15.8	75.3 16.0	76.3 16.2	77.3 16.4
29	71.1 16.4	72.1 16.6	73.1 16.9	74.1 17.1	75.0 17.3	76.0 17.5	77.0 17.8	77.9 18.0	71.1 16.4	72.1 16.6	73.1 16.9	74.1 17.1	75.0 17.3	76.0 17.5	77.0 17.8
30	70.8 17.7	71.8 17.9	72.8 18.1	73.7 18.4	74.7 18.6	75.7 18.9	76.7 19.1	77.6 19.4	70.8 17.7	71.8 17.9	72.8 18.1	73.7 18.4	74.7 18.6	75.7 18.9	76.7 19.1
31	70.5 18.9	71.5 19.2	72.4 19.4	73.4 19.7	74.4 19.9	75.3 20.2	76.3 20.4	77.3 20.7	70.5 18.9	71.5 19.2	72.4 19.4	73.4 19.7	74.4 19.9	75.3 20.2	76.3 20.4
32	70.2 20.1	71.1 20.4	72.1 20.7	73.1 20.9	74.0 21.2	75.0 21.5	75.9 21.8	76.9 22.1	70.2 20.1	71.1 20.4	72.1 20.7	73.1 20.9	74.0 21.2	75.0 21.5	75.9 21.8
33	69.8 21.3	70.8 21.6	71.7 21.9	72.7 22.2	73.6 22.5	74.6 22.8	75.5 23.1	76.5 23.4	69.8 21.3	70.8 21.6	71.7 21.9	72.7 22.2	73.6 22.5	74.6 22.8	75.5 23.1
34	69.4 22.6	70.4 22.9	71.3 23.2	72.3 23.5	73.2 23.8	74.2 24.1	75.1 24.4	76.1 24.7	69.4 22.6	70.4 22.9	71.3 23.2	72.3 23.5	73.2 23.8	74.2 24.1	75.1 24.4
35	69.0 23.8	70.0 24.1	70.9 24.4	71.9 24.7	72.8 25.1	73.8 25.4	74.7 25.7	75.6 26.0	69.0 23.8	70.0 24.1	70.9 24.4	71.9 24.7	72.8 25.1	73.8 25.4	74.7 25.7
36	68.6 25.0	69.5 25.3	70.5 25.7	71.4 26.0	72.4 26.3	73.3 26.7	74.2 27.0	75.2 27.4	68.6 25.0	69.5 25.3	70.5 25.7	71.4 26.0	72.4 26.3	73.3 26.7	74.2 27.0
37	68.2 26.2	69.1 26.5	70.0 26.9	71.0 27.2	71.9 27.6	72.8 28.0	73.8 28.3	74.7 28.7	68.2 26.2	69.1 26.5	70.0 26.9	71.0 27.2	71.9 27.6	72.8 28.0	73.8 28.3
38	67.7 27.3	68.6 27.7	69.5 28.1	70.5 28.5	71.4 28.8	72.3 29.2	73.2 29.6	74.2 30.0	67.7 27.3	68.6 27.7	69.5 28.1	70.5 28.5	71.4 28.8	72.3 29.2	73.2 29.6
39	67.2 28.5	68.1 28.9	69.0 29.3	70.0 29.7	70.9 30.1	71.8 30.5	72.7 30.9	73.6 31.3	67.2 28.5	68.1 28.9	69.0 29.3	70.0 29.7	70.9 30.1	71.8 30.5	72.7 30.9
40	66.7 29.7	67.6 30.1	68.5 30.5	69.4 30.9	70.3 31.3	71.3 31.7	72.2 32.1	73.1 32.5	66.7 29.7	67.6 30.1	68.5 30.5	69.4 30.9	70.3 31.3	71.3 31.7	72.2 32.1
41	66.2 30.9	67.1 31.3	68.0 31.7	68.9 32.1	69.8 32.5	70.7 33.0	71.6 33.4	72.5 33.8	66.2 30.9	67.1 31.3	68.0 31.7	68.9 32.1	69.8 32.5	70.7 33.0	71.6 33.4
42	65.6 32.0	66.5 32.4	67.4 32.9	68.3 33.3	69.2 33.8	70.1 34.2	71.0 34.6	71.9 35.1	65.6 32.0	66.5 32.4	67.4 32.9	68.3 33.3	69.2 33.8	70.1 34.2	71.0 34.6
43	65.0 33.1	65.9 33.6	66.8 34.0	67.7 34.5	68.6 35.0	69.5 35.4	70.4 35.9	71.3 36.3	65.0 33.1	65.9 33.6	66.8 34.0	67.7 34.5	68.6 35.0	69.5 35.4	70.4 35.9
44	64.5 34.3	65.3 34.7	66.2 35.2	67.1 35.7	68.0 36.1	68.9 36.6	69.8 37.1	70.6 37.6	64.5 34.3	65.3 34.7	66.2 35.2	67.1 35.7	68.0 36.1	68.9 36.6	69.8 37.1
45	63.8 35.4	64.7 35.9	65.6 36.4	66.5 36.8	67.3 37.3	68.2 37.8	69.1 38.3	70.0 38.8	63.8 35.4	64.7 35.9	65.6 36.4	66.5 36.8	67.3 37.3	68.2 37.8	69.1 38.3
46	63.2 36.5	64.1 37.0	65.0 37.5	65.8 38.0	66.7 38.5	67.5 39.0	68.4 39.5	69.3 40.0	63.2 36.5	64.1 37.0	65.0 37.5	65.8 38.0	66.7 38.5	67.5 39.0	68.4 39.5
47	62.6 37.6	63.4 38.1	64.3 38.6	65.1 39.1	66.0 39.7	66.9 40.2	67.7 40.7	68.6 41.2	62.6 37.6	63.4 38.1	64.3 38.6	65.1 39.1	66.0 39.7	66.9 40.2	67.7 40.7
48	61.9 38.7	62.8 39.2	63.6 39.7	64.5 40.3	65.3 40.8	66.1 41.3	67.0 41.9	67.8 42.4	61.9 38.7	62.8 39.2	63.6 39.7	64.5 40.3	65.3 40.8	66.1 41.3	67.0 41.9
49	61.2 39.8	62.1 40.3	62.9 40.8	63.7 41.4	64.6 41.9	65.4 42.5	66.3 43.0	67.1 43.6	61.2 39.8	62.1 40.3	62.9 40.8	63.7 41.4	64.6 41.9	65.4 42.5	66.3 43.0
50	60.5 40.8	61.3 41.4	62.2 41.9	63.0 42.5	63.8 43.1	64.7 43.6	65.5 44.2	66.3 44.7	60.5 40.8	61.3 41.4	62.2 41.9	63.0 42.5	63.8 43.1	64.7 43.6	65.5 44.2
51	59.8 41.9	60.6 42.4	61.4 43.0	62.3 43.6	63.1 44.2	63.9 44.7	64.7 45.3	65.5 45.9	59.8 41.9	60.6 42.4	61.4 43.0	62.3 43.6	63.1 44.2	63.9 44.7	64.7 45.3
52	59.1 42.9	59.9 43.5	60.7 44.1	61.5 44.7	62.3 45.3	63.1 45.8	63.9 46.4	64.7 47.0	59.1 42.9	59.9 43.5	60.7 44.1	61.5 44.7	62.3 45.3	63.1 45.8	63.9 46.4
53	58.3 43.9	59.1 44.5	59.9 45.1	60.7 45.7	61.5 46.3	62.3 46.9	63.1 47.5	63.9 48.1	58.3 43.9	59.1 44.5	59.9 45.1	60.7 45.7	61.5 46.3	62.3 46.9	63.1 47.5
54	57.5 44.9	58.3 45.6	59.1 46.2	59.9 46.8	60.7 47.4	61.5 48.0	62.3 48.6	63.0 4							

Traverse Table.

(x)

Distance. 81		82		83		84		85		86		87		88		Crs.
Cr.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	
1	80.9 04.0	81.9 04.0	82.9 04.1	83.9 04.1	84.9 04.2	85.9 04.2	86.9 04.3	87.9 04.3	88.9 04.3	89.9 04.3	90.9 04.3	91.9 04.3	92.9 04.3	93.9 04.3	94.9 04.3	89°
2	80.6 07.9	81.6 08.0	82.6 08.1	83.6 08.2	84.6 08.3	85.6 08.4	86.6 08.5	87.6 08.6	88.6 08.6	89.6 08.6	90.6 08.6	91.6 08.6	92.6 08.6	93.6 08.6	94.6 08.6	88
3	80.1 11.9	81.1 12.0	82.1 12.2	83.1 12.3	84.1 12.5	85.1 12.6	86.1 12.8	87.0 12.9	88.0 12.9	89.0 12.9	90.0 12.9	91.0 12.9	92.0 12.9	93.0 12.9	94.0 12.9	87
4	79.4 15.8	80.4 16.0	81.4 16.2	82.4 16.4	83.4 16.6	84.3 16.8	85.3 17.0	86.3 17.2	87.3 17.2	88.3 17.2	89.3 17.2	90.3 17.2	91.3 17.2	92.3 17.2	93.3 17.2	86
5	78.6 19.7	79.5 19.9	80.5 20.2	81.5 20.4	82.5 20.7	83.4 20.9	84.4 21.1	85.4 21.4	86.4 21.4	87.4 21.4	88.4 21.4	89.4 21.4	90.4 21.4	91.4 21.4	92.4 21.4	85
6	77.5 23.5	78.5 23.8	79.4 24.1	80.4 24.4	81.3 24.7	82.3 25.0	83.3 25.2	84.2 25.5	85.2 25.5	86.2 25.5	87.2 25.5	88.2 25.5	89.2 25.5	90.2 25.5	91.2 25.5	84
7	76.3 27.3	77.2 27.6	78.1 28.0	79.1 28.3	80.0 28.6	81.0 29.0	81.9 29.3	82.9 29.6	83.9 29.6	84.9 29.6	85.9 29.6	86.9 29.6	87.9 29.6	88.9 29.6	89.9 29.6	83
8	74.8 31.0	75.8 31.4	76.7 31.8	77.6 32.1	78.5 32.5	79.5 32.9	80.4 33.3	81.3 33.7	82.3 33.7	83.3 33.7	84.3 33.7	85.3 33.7	86.3 33.7	87.3 33.7	88.3 33.7	82
9	73.2 34.6	74.1 35.1	75.0 35.5	75.9 35.9	76.8 36.3	77.7 36.8	78.6 37.2	79.6 37.6	80.6 37.6	81.6 37.6	82.6 37.6	83.6 37.6	84.6 37.6	85.6 37.6	86.6 37.6	81
10	71.4 38.2	72.3 38.6	73.2 39.1	74.1 39.6	75.0 40.1	75.9 40.5	76.7 41.0	77.6 41.5	78.6 41.5	79.6 41.5	80.6 41.5	81.6 41.5	82.6 41.5	83.6 41.5	84.6 41.5	80
11	69.5 41.6	70.3 42.0	71.2 42.7	72.0 43.2	72.9 43.7	73.8 44.2	74.6 44.7	75.5 45.2	76.5 45.2	77.5 45.2	78.5 45.2	79.5 45.2	80.5 45.2	81.5 45.2	82.5 45.2	79
12	67.3 45.0	68.2 45.6	69.0 46.1	69.8 46.7	70.7 47.2	71.5 47.8	72.3 48.3	73.2 48.9	74.2 48.9	75.2 48.9	76.2 48.9	77.2 48.9	78.2 48.9	79.2 48.9	80.2 48.9	78
13	65.1 48.3	65.9 48.9	66.7 49.4	67.5 50.0	68.3 50.6	69.1 51.2	69.9 51.8	70.7 52.4	71.7 52.4	72.7 52.4	73.7 52.4	74.7 52.4	75.7 52.4	76.7 52.4	77.7 52.4	77
14	62.6 51.4	63.4 52.0	64.2 52.7	64.9 53.3	65.7 53.9	66.5 54.6	67.2 55.2	68.0 55.8	68.9 55.8	69.9 55.8	70.9 55.8	71.9 55.8	72.9 55.8	73.9 55.8	74.9 55.8	76
15	60.0 54.4	60.8 55.1	61.5 55.7	62.2 56.4	63.0 57.1	63.7 57.7	64.5 58.4	65.2 59.1	66.1 59.1	67.1 59.1	68.1 59.1	69.1 59.1	70.1 59.1	71.1 59.1	72.1 59.1	75
16	57.3 57.3	58.0 58.0	58.7 58.7	59.4 59.4	60.1 60.1	60.8 60.8	61.5 61.5	62.2 62.2	63.0 62.2	63.7 62.2	64.5 62.2	65.2 62.2	66.0 62.2	66.7 62.2	67.5 62.2	74
17	81.0 01.4	82.0 01.4	83.0 01.4	84.0 01.5	85.0 01.5	86.0 01.5	87.0 01.5	88.0 01.5	89.0 01.5	90.0 01.5	91.0 01.5	92.0 01.5	93.0 01.5	94.0 01.5	95.0 01.5	73
18	81.0 02.8	82.0 02.9	83.0 02.9	84.0 03.0	85.0 03.0	86.0 03.0	87.0 03.0	88.0 03.0	89.0 03.0	90.0 03.0	91.0 03.0	92.0 03.0	93.0 03.0	94.0 03.0	95.0 03.0	72
19	80.9 04.2	81.9 04.3	82.9 04.3	83.9 04.4	84.9 04.4	85.9 04.5	86.9 04.6	87.9 04.6	88.9 04.6	89.9 04.6	90.9 04.6	91.9 04.6	92.9 04.6	93.9 04.6	94.9 04.6	71
20	80.8 05.7	81.8 05.7	82.8 05.8	83.8 05.9	84.8 05.9	85.8 06.0	86.8 06.1	87.8 06.1	88.8 06.1	89.8 06.1	90.8 06.1	91.8 06.1	92.8 06.1	93.8 06.1	94.8 06.1	70
21	80.7 07.1	81.7 07.1	82.7 07.2	83.7 07.3	84.7 07.4	85.7 07.5	86.7 07.6	87.7 07.7	88.7 07.7	89.7 07.7	90.7 07.7	91.7 07.7	92.7 07.7	93.7 07.7	94.7 07.7	69
22	80.6 08.5	81.6 08.6	82.6 08.7	83.6 08.8	84.6 08.9	85.6 09.0	86.6 09.1	87.6 09.2	88.6 09.2	89.6 09.2	90.6 09.2	91.6 09.2	92.6 09.2	93.6 09.2	94.6 09.2	68
23	80.4 09.9	81.4 10.0	82.4 10.1	83.4 10.2	84.4 10.4	85.4 10.5	86.4 10.6	87.3 10.7	88.3 10.7	89.3 10.7	90.3 10.7	91.3 10.7	92.3 10.7	93.3 10.7	94.3 10.7	67
24	80.2 11.3	81.2 11.4	82.2 11.6	83.2 11.7	84.2 11.8	85.2 12.0	86.2 12.1	87.1 12.2	88.1 12.2	89.1 12.2	90.1 12.2	91.1 12.2	92.1 12.2	93.1 12.2	94.1 12.2	66
25	80.0 12.7	81.0 12.8	82.0 13.0	83.0 13.1	84.0 13.3	84.9 13.5	85.9 13.6	86.9 13.8	87.9 13.8	88.9 13.8	89.9 13.8	90.9 13.8	91.9 13.8	92.9 13.8	93.9 13.8	65
26	79.8 14.1	80.8 14.2	81.7 14.4	82.7 14.6	83.7 14.8	84.7 14.9	85.7 15.1	86.7 15.3	87.7 15.3	88.7 15.3	89.7 15.3	90.7 15.3	91.7 15.3	92.7 15.3	93.7 15.3	64
27	79.5 15.5	80.5 15.6	81.5 15.8	82.5 16.0	83.4 16.2	84.4 16.4	85.4 16.6	86.4 16.8	87.4 16.8	88.4 16.8	89.4 16.8	90.4 16.8	91.4 16.8	92.4 16.8	93.4 16.8	63
28	79.2 16.8	80.2 17.0	81.2 17.3	82.2 17.5	83.1 17.7	84.1 17.9	85.1 18.1	86.1 18.3	87.1 18.3	88.1 18.3	89.1 18.3	90.1 18.3	91.1 18.3	92.1 18.3	93.1 18.3	62
29	78.9 18.2	79.9 18.4	80.9 18.7	81.8 18.9	82.8 19.1	83.8 19.3	84.8 19.6	85.7 19.8	86.7 19.8	87.7 19.8	88.7 19.8	89.7 19.8	90.7 19.8	91.7 19.8	92.7 19.8	61
30	78.6 19.6	79.6 19.8	80.5 20.1	81.5 20.3	82.5 20.6	83.4 20.8	84.4 21.0	85.4 21.3	86.4 21.3	87.4 21.3	88.4 21.3	89.4 21.3	90.4 21.3	91.4 21.3	92.4 21.3	60
31	78.2 21.0	79.2 21.2	80.2 21.5	81.1 21.7	82.1 22.0	83.1 22.3	84.0 22.5	85.0 22.8	86.0 22.8	87.0 22.8	88.0 22.8	89.0 22.8	90.0 22.8	91.0 22.8	92.0 22.8	59
32	77.9 22.3	78.8 22.6	79.8 22.9	80.7 23.2	81.7 23.4	82.7 23.7	83.6 24.0	84.6 24.3	85.6 24.3	86.6 24.3	87.6 24.3	88.6 24.3	89.6 24.3	90.6 24.3	91.6 24.3	58
33	77.5 23.7	78.4 24.0	79.4 24.3	80.3 24.6	81.3 24.9	82.2 25.1	83.2 25.4	84.2 25.7	85.2 25.7	86.2 25.7	87.2 25.7	88.2 25.7	89.2 25.7	90.2 25.7	91.2 25.7	57
34	77.0 25.0	78.0 25.3	78.9 25.6	79.9 26.0	80.8 26.3	81.8 26.6	82.7 26.9	83.7 27.2	84.7 27.2	85.7 27.2	86.7 27.2	87.7 27.2	88.7 27.2	89.7 27.2	90.7 27.2	56
35	76.6 26.4	77.5 26.7	78.5 27.0	79.4 27.3	80.4 27.7	81.3 28.0	82.3 28.3	83.2 28.7	84.2 28.7	85.2 28.7	86.2 28.7	87.2 28.7	88.2 28.7	89.2 28.7	90.2 28.7	55
36	76.1 27.7	77.1 28.0	78.0 28.4	78.9 28.7	79.9 29.1	80.8 29.4	81.8 29.8	82.7 30.1	83.7 30.1	84.7 30.1	85.7 30.1	86.7 30.1	87.7 30.1	88.7 30.1	89.7 30.1	54
37	75.6 29.0	76.6 29.4	77.5 29.7	78.4 30.1	79.4 30.5	80.3 30.8	81.2 31.2	82.2 31.5	83.2 31.5	84.2 31.5	85.2 31.5	86.2 31.5	87.2 31.5	88.2 31.5	89.2 31.5	53
38	75.1 30.3	76.0 30.7	77.0 31.1	77.9 31.5	78.8 31.8	79.7 32.2	80.7 32.6	81.6 33.0	82.6 33.0	83.6 33.0	84.6 33.0	85.6 33.0	86.6 33.0	87.6 33.0	88.6 33.0	52
39	74.6 31.6	75.5 32.0	76.4 32.4	77.3 32.8	78.2 33.2	79.2 33.6	80.1 34.0	81.0 34.4	82.0 34.4	83.0 34.4	84.0 34.4	85.0 34.4	86.0 34.4	87.0 34.4	88.0 34.4	51
40	74.0 32.9	74.9 33.4	75.8 33.8	76.7 34.2	77.7 34.6	78.6 35.0	79.5 35.4	80.4 35.8	81.4 35.8	82.4 35.8	83.4 35.8	84.4 35.8	85.4 35.8	86.4 35.8	87.4 35.8	50
41	73.4 34.2	74.3 34.7	75.2 35.1	76.1 35.5	77.0 35.9	77.9 36.3	78.8 36.8	79.7 37.2	80.7 37.2	81.7 37.2	82.7 37.2	83.7 37.2	84.7 37.2	85.7 37.2	86.7 37.2	49
42	72.8 35.5	73.7 35.9	74.6 36.4	75.5 36.8	76.4 37.3	77.3 37.7	78.2 38.1	79.1 38.6	80.1 38.6	81.1 38.6	82.1 38.6	83.1 38.6	84.1 38.6	85.1 38.6	86.1 38.6	48
43	72.2 36.8	73.1 37.2	74.0 37.7	74.8 38.1	75.7 38.6	76.6 39.0	77.5 39.5	78.4 40.0	79.4 40.0	80.4 40.0	81.4 40.0	82.4 40.0	83.4 40.0	84.4 40.0	85.4 40.0	47
44	71.5 38.0	72.4 38.5	73.3 39.0	74.2 39.4	75.1 39.9	75.9 40.4	76.8 40.8	77.7 41.3	78.7 41.3	79.7 41.3	80.7 41.3	81.7 41.3	82.7 41.3	83.7 41.3	84.7 41.3	46
45	70.8 39.3	71.7 39.8	72.6 40.2	73.5 40.7	74.3 41.2	75.2 41.7	76.1 42.2	77.0 42.7	78.0 42.7	79.0 42.7	80.0 42.7	81.0 42.7	82.0 42.7	83.0 42.7	84.0 42.7	45
46	70.1 40.5	71.0 41.0	71.9 41.5	72.7 42.0	73.6 42.5	74.5 43.0	75.3 43.5	76.2 44.0	77.2 44.0	78.2 44.0	79.2 44.0	80.2 44.0	81.2 44.0	82.2 44.0	83.2 44.0	44
47	69.4 41.7	70.3 42.2	71.1 42.7	72.0 43.3	72.9 43.8	73.7 44.3	74.6 44.8	75.5 45.3	76.5 45.3	77.5 45.3	78.5 45.3	79.5 45.3	80.5 45.3	81.5 45.3	82.5 45.3	43
48	68.7 42.9	69.5 43.5	70.4 44.0	71.2 44.5	72.1 45.0	72.9 45.6	73.8 46.1	74.6 46.6	75.6 46.6	76.6 46.6	77.6 46.6	78.6 46.6	79.6 46.6	80.6 46.6	81.6 46.6	42
49	67.9 44.1	68.8 44.7	69.6 45.2	70.4 45.7	71.3 46.3	72.1 46.8	73.0 47.4	73.8 47.9	74.8 47.9	75.8 47.9	76.8 47.9	77.8 47.9	78.8 47.9	79.8 47.9	80.8 47.9	41
50	67.2 45.3	68.0 45.9	68.8 46.4	69.6 47.0	70.5 47.5	71.3 48.1	72.1 48.6	73.0 49.2	74.0 49.2	75.0 49.2	76.0 49.2	77.0 49.2	78.0 49.2	79.0 49.2	80.0 49.2	40
51	66.4 46.5	67.2 47.0	68.0 47.6	68.8 48.2	69.6 48.8	70.4 49.3	71.3 49.9	72.1 50.5	73.1 50.5	74.1 50.5	75.1 50.5	76.1 50.5	77.1 50.5	78.1 50.5	79.1 50.5	39
52	65.5 47.6	66.3 48.2	67.1 48.8	68.0 49.4	68.8 50.0	69.6 50.5	70.4 51.1	71.2 51.7	72.2 51.7	73.2 51.7	74.2 51.7	75.2 51				

Traverse Table.

(x.)

Distance. 89		90		91		92		93		94		95		96							
Crs.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Crs.						
1	88.9 04.4 88.6 08.7 88.0 13.1	89.9 04.4 89.6 08.8 89.0 13.2	90.9 04.5 90.6 08.9 90.0 13.3	91.9 04.5 91.6 09.0 91.0 13.5	92.9 04.6 92.6 09.1 92.0 13.6	93.9 04.6 93.6 09.2 93.0 13.8	94.9 04.7 94.6 09.3 94.0 13.9	95.9 04.7 95.6 09.4 95.0 14.1	96.9 04.7 96.6 09.4 96.0 14.1	97.9 04.7 97.6 09.4 97.0 14.1	98.9 04.7 98.6 09.4 98.0 14.1	99.9 04.7 99.6 09.4 99.0 14.1	100.9 04.7 100.6 09.4 100.0 14.1	101.9 04.7 101.6 09.4 101.0 14.1	102.9 04.7 102.6 09.4 102.0 14.1						
2	87.3 17.4 86.3 21.6 85.2 25.8 83.8 30.0	88.3 17.6 87.3 21.9 86.1 26.1 84.7 30.3	89.2 17.8 88.3 22.1 87.1 26.4 85.7 30.7	90.2 18.0 89.2 22.4 88.0 26.7 86.6 31.0	91.2 18.1 90.2 22.6 89.0 27.0 87.6 31.3	92.2 18.3 91.2 22.8 90.0 27.3 88.5 31.7	93.2 18.5 92.2 23.1 91.0 27.6 89.4 32.0	94.2 18.7 93.2 23.3 92.0 27.9 90.4 32.3	95.2 18.9 94.2 23.5 93.0 28.1 91.4 32.6	96.2 19.1 95.2 23.7 94.0 28.3 92.4 32.9	97.2 19.3 96.2 23.9 95.0 28.5 93.4 33.2	98.2 19.5 97.2 24.1 96.0 28.7 94.4 33.5	99.2 19.7 98.2 24.3 97.0 28.9 95.4 33.8	100.2 19.9 99.2 24.5 98.0 29.1 96.4 34.1	101.2 20.1 100.2 24.7 99.0 29.3 97.4 34.4						
3	82.2 34.1 80.5 38.1 78.5 41.9 76.3 45.7	83.2 34.4 81.4 38.5 79.4 42.4 77.2 46.3	84.1 34.8 82.3 38.9 80.3 42.9 78.1 46.8	85.0 35.2 83.2 39.3 81.1 43.4 78.9 47.3	85.9 35.6 84.1 39.8 82.0 43.8 79.8 47.8	86.8 36.0 85.0 40.2 82.9 44.3 80.6 48.3	87.8 36.4 85.9 40.6 83.8 44.8 81.5 48.8	88.7 36.7 86.8 41.1 84.7 45.2 82.4 49.3	89.7 37.1 87.8 41.5 85.7 45.6 83.4 49.7	90.7 37.5 88.8 41.9 86.7 46.0 84.4 50.1	91.7 37.9 89.8 42.3 87.7 46.4 85.4 50.5	92.7 38.3 90.8 42.7 88.7 46.8 86.4 50.9	93.7 38.7 91.8 43.1 89.7 47.2 87.4 51.3	94.7 39.1 92.8 43.5 90.7 47.6 88.4 51.7	95.7 39.5 93.8 43.9 91.7 48.0 89.4 52.1						
4	74.0 49.4 71.5 53.0 68.8 56.5 65.9 59.8	74.8 50.0 72.3 53.6 69.6 57.1 66.7 60.4	75.7 50.6 73.1 54.2 70.3 57.7 67.4 61.1	76.5 51.1 73.9 54.8 71.1 58.4 68.2 61.8	77.3 51.7 74.7 55.4 71.9 59.0 68.9 62.4	78.2 52.2 75.5 56.0 72.7 59.6 69.6 63.1	79.0 52.8 76.3 56.6 73.4 60.3 70.4 63.8	79.8 53.3 77.1 57.2 74.2 60.9 71.1 64.5	80.6 53.9 77.9 57.8 74.3 61.5 71.2 65.1	81.4 54.5 78.7 58.4 75.0 62.1 71.9 65.7	82.2 55.1 79.5 59.0 75.6 62.7 72.5 66.3	83.0 55.7 80.3 59.6 76.4 63.3 73.3 66.9	83.8 56.3 81.1 60.2 77.2 63.9 74.1 67.5	84.6 56.9 81.9 60.8 78.0 64.5 74.9 68.1	85.4 57.5 82.7 61.4 78.8 65.1 75.7 68.7						
5	89.0 01.6 88.9 03.1 88.9 04.7 88.8 06.2 88.7 07.8 88.5 09.3 88.3 10.8 88.1 12.4	90.0 01.6 89.9 03.1 89.9 04.7 89.8 06.3 89.7 07.9 89.5 09.4 89.3 11.0 89.1 12.5	91.0 01.6 90.9 03.2 90.9 04.8 90.8 06.4 90.7 07.9 90.5 09.5 90.3 11.1 90.1 12.7	92.0 01.6 91.9 03.2 91.9 04.8 91.8 06.4 91.6 08.0 91.5 09.6 91.3 11.2 91.1 12.8	93.0 01.6 92.9 03.2 92.9 04.9 92.8 06.5 92.6 08.1 92.5 09.7 92.3 11.3 92.1 12.9	94.0 01.6 93.9 03.3 93.9 04.9 93.8 06.6 93.6 08.2 93.5 09.8 93.3 11.5 93.1 13.1	95.0 01.7 94.9 03.3 94.9 05.0 94.8 06.6 94.6 08.3 94.5 09.9 94.3 11.6 94.1 13.2	96.0 01.7 95.9 03.4 95.9 05.0 95.8 06.7 95.6 08.4 95.5 10.0 95.3 11.7 95.1 13.3	97.0 01.7 96.9 03.4 96.9 05.1 96.8 06.7 96.6 08.4 96.5 10.1 96.3 11.8 96.1 13.4	98.0 01.7 97.9 03.4 97.9 05.1 97.8 06.7 97.6 08.4 97.5 10.1 97.3 11.8 97.1 13.4	99.0 01.7 98.9 03.4 98.9 05.1 98.8 06.7 98.6 08.4 98.5 10.1 98.3 11.8 98.1 13.4	100.0 01.7 99.9 03.4 99.9 05.1 99.8 06.7 99.6 08.4 99.5 10.1 99.3 11.8 99.1 13.4	101.0 01.7 100.9 03.4 100.9 05.1 100.8 06.7 100.6 08.4 100.5 10.1 100.3 11.8 100.1 13.4	102.0 01.7 101.9 03.4 101.9 05.1 101.8 06.7 101.6 08.4 101.5 10.1 101.3 11.8 101.1 13.4	103.0 01.7 102.9 03.4 102.9 05.1 102.8 06.7 102.6 08.4 102.5 10.1 102.3 11.8 102.1 13.4						
6	87.6 15.5 87.4 17.0 87.1 18.5 86.7 20.0 86.4 21.5 86.0 23.0 85.6 24.5 85.1 26.0 84.6 27.5 84.2 29.0 83.6 30.4 83.1 31.9 82.5 33.3 81.9 34.8 81.3 36.2	88.6 15.6 88.3 17.2 88.0 18.7 87.7 20.2 87.3 21.8 86.9 23.3 86.5 24.8 86.1 26.3 85.6 27.8 85.2 29.3 84.6 30.8 84.0 32.3 83.4 33.7 82.8 35.2 82.2 36.6	89.6 15.8 89.3 17.4 89.0 18.9 88.7 20.5 88.3 22.0 87.9 23.6 87.5 25.1 87.0 26.6 86.5 28.1 86.1 29.6 85.5 31.1 84.9 32.6 84.3 34.1 83.7 35.6 83.1 37.0	90.6 16.0 90.3 17.6 90.0 19.1 89.6 20.7 89.3 22.3 88.9 23.8 88.4 25.4 88.0 26.9 87.5 28.4 87.0 30.0 86.4 31.5 85.8 33.0 85.2 34.5 84.6 36.0 84.0 37.4	91.6 16.1 91.3 17.7 91.0 19.3 90.6 20.9 90.2 22.5 89.8 24.1 89.4 25.6 88.9 27.2 88.4 28.7 87.9 30.3 87.4 31.8 86.8 33.3 86.2 34.8 85.6 36.3 85.0 37.8	92.6 16.3 92.3 17.9 92.0 19.5 91.6 21.1 91.2 22.7 90.8 24.3 90.4 25.9 89.9 27.5 89.4 29.0 88.9 30.6 88.3 32.1 87.8 33.7 87.2 35.2 86.6 36.7 86.0 38.2	93.6 16.5 93.3 18.1 93.0 19.7 92.6 21.3 92.2 22.9 91.8 24.5 91.4 26.1 90.9 27.7 90.4 29.2 89.9 30.8 89.3 32.3 88.8 33.9 88.2 35.4 87.6 36.9 87.0 38.4	94.6 16.7 94.3 18.3 94.0 19.9 93.6 21.5 93.2 23.1 92.8 24.7 92.4 26.3 91.9 27.9 91.4 29.4 90.9 31.0 90.3 32.5 89.8 34.1 89.2 35.6 88.6 37.1 88.0 38.6	95.6 16.9 95.3 18.5 95.0 20.1 94.6 21.7 94.2 23.3 93.8 24.9 93.4 26.5 92.9 28.1 92.4 29.6 91.9 31.2 91.3 32.7 90.8 34.3 90.2 35.8 89.6 37.3 89.0 38.8	96.6 17.1 96.3 18.7 96.0 20.3 95.6 21.9 95.2 23.5 94.8 25.1 94.4 26.7 93.9 28.3 93.4 29.8 92.9 31.4 92.3 32.9 91.8 34.5 91.2 36.0 90.6 37.5 90.0 39.0	97.6 17.3 97.3 18.9 97.0 20.5 96.6 22.1 96.2 23.7 95.8 25.3 95.4 26.9 94.9 28.5 94.4 30.0 93.9 31.6 93.3 33.1 92.8 34.7 92.2 36.2 91.6 37.7 91.0 39.2	98.6 17.5 98.3 19.1 98.0 20.7 97.6 22.3 97.2 23.9 96.8 25.5 96.4 27.1 95.9 28.7 95.4 30.2 94.9 31.8 94.3 33.3 93.8 34.9 93.2 36.4 92.6 37.9 92.0 39.4	99.6 17.7 99.3 19.3 99.0 20.9 98.6 22.5 98.2 24.1 97.8 25.7 97.4 27.3 96.9 28.9 96.4 30.4 95.9 32.0 95.3 33.5 94.8 35.1 94.2 36.6 93.6 38.1 93.0 39.6	100.6 17.9 100.3 19.5 100.0 21.1 99.6 22.7 99.2 24.3 98.8 25.9 98.4 27.5 97.9 29.1 97.4 30.6 96.9 32.2 96.3 33.7 95.8 35.3 95.2 36.8 94.6 38.3 94.0 39.8	101.6 18.1 101.3 19.7 101.0 21.3 100.6 22.9 100.2 24.5 99.8 26.1 99.4 27.7 98.9 29.3 98.4 30.8 97.9 32.4 97.3 33.9 96.8 35.5 96.2 37.0 95.6 38.5 95.0 39.9	102.6 18.3 102.3 19.9 102.0 21.5 101.6 23.1 101.2 24.7 100.8 26.3 100.4 27.9 99.9 29.5 99.4 31.0 98.9 32.6 98.3 34.1 97.8 35.7 97.2 37.2 96.6 38.7 96.0 40.2					
7	80.7 37.6 80.0 39.0 79.3 40.4 78.6 41.8 77.8 43.1 77.1 44.5 76.3 45.8 75.5 47.2 74.6 48.5 73.8 49.8 72.9 51.0 72.0 52.3 71.1 53.6 70.1 54.8 69.2 56.0 68.2 57.2 67.2 58.4 66.1 59.6 65.0 60.8 64.0 61.8 62.9 62.9	81.6 38.0 80.9 39.5 80.2 40.9 79.5 42.3 78.7 43.6 77.9 45.0 77.1 46.4 76.3 47.7 75.4 49.0 74.6 50.3 73.7 51.6 72.8 52.9 71.9 54.2 70.9 55.4 69.9 56.6 68.9 57.9 67.9 59.0 66.9 60.2 65.8 61.4 64.7 62.5 63.6 63.6	82.5 38.5 81.8 39.9 81.1 41.3 80.3 42.7 79.6 44.1 78.8 45.5 78.0 46.9 77.2 48.2 76.3 49.6 75.5 50.9 74.6 52.2 73.7 53.5 72.7 54.8 71.7 56.0 70.7 57.3 69.7 58.5 68.7 59.7 67.6 60.9 66.5 62.1 65.4 63.2 64.3 64.3	83.4 38.9 82.7 40.3 82.0 41.8 81.2 43.2 80.5 44.6 79.7 46.0 78.9 47.4 78.0 48.8 77.2 50.1 76.3 51.4 75.4 52.8 74.4 54.1 73.5 55.4 72.5 56.6 71.5 57.9 70.5 59.1 69.4 60.4 68.3 61.6 67.2 62.7 66.1 63.9 65.0 65.0	84.3 39.3 83.6 40.8 82.9 42.2 82.1 43.7 81.3 45.1 80.5 46.5 79.7 47.9 78.9 49.3 78.0 50.7 77.1 52.0 76.2 53.3 75.2 54.7 74.3 56.0 73.3 57.3 72.3 58.5 71.2 59.8 70.2 61.0 69.1 62.2 68.0 63.4 66.9 64.6 65.8 65.8	85.2 39.7 84.5 41.2 83.8 42.7 83.0 44.1 82.2 45.6 81.4 47.0 80.6 48.4 79.7 49.8 78.8 51.2 77.9 52.6 77.0 53.9 76.0 55.3 75.1 56.6 74.1 57.9 73.1 59.2 72.0 60.4 70.9 61.7 69.9 62.9 68.8 64.1 67.6 65.3 66.5 66.5	86.1 40.1 85.4 41.6 84.6 43.1 83.9 44.6 83.1 46.1 82.3 47.5 81.4 48.9 80.6 50.3 79.7 51.7 78.8 53.1 77.9 54.5 76.9 55.8 75.9 57.2 74.9 58.5 73.8 59.8 72.8 61.1 71.7 62.3 70.6 63.6 69.5 64.8 68.3 66.0 67.2 67.2	87.0 40.6 86.3 42.1 85.5 43.6 84.8 45.1 84.0 46.5 83.1 48.0 82.3 49.4 81.4 50.9 80.5 52.3 79.6 53.7 78.6 55.1 77.7 56.4 76.7 57.8 75.6 59.1 74.6 60.4 73.5 61.7 72.5 63.0 71.3 64.2 70.2 65.5 69.1 66.7 67.9 67.9	87.9 41.1 87.2 42.6 86.4 44.1 85.7 45.6 84.9 47.0 84.1 48.5 83.2 49.9 82.3 51.4 81.4 52.8 80.5 54.2 79.6 55.6 78.6 56.9 77.6 58.3 76.6 59.6 75.5 60.9 74.5 62.2 73.4 63.5 72.3 64.8 71.2 66.1 70.1 67.4 69.0 68.7	88.8 41.6 88.1 43.1 87.3 44.6 86.6 46.1 85.8 47.5 85.0 49.0 84.1 50.4 83.2 51.9 82.3 53.3 81.4 54.8 80.5 56.1 79.6 57.5 78.6 58.8 77.6 60.2 76.5 61.5 75.5 62.8 74.4 64.1 73.3 65.4 72.2 66.7 71.1 68.0 70.0 69.3	89.7 42.1 89.0 43.6 88.2 45.1 87.5 46.6 86.7 48.0 85.9 49.5 85.0 50.9 84.1 52.4 83.2 53.8 82.3 55.2 81.4 56.6 80.5 57.9 79.6 59.3 78.6 60.6 77.6 61.9 76.5 63.2 75.5 64.5 74.4 65.8 73.3 67.1 72.2 68.4 71.1 69.7	90.6 42.6 89.9 44.1 89.1 45.6 88.4 47.1 87.6 48.5 86.8 49.9 85.9 51.4 85.0 52.8 84.1 54.2 83.2 55.6 82.3 57.0 81.4 58.3 80.5 59.7 79.6 61.0 78.6 62.3 77.6 63.6 76.5 64.9 75.5 66.2 74.4 67.5 73.3 68.8 72.2 70.1	91.5 43.1 90.8 44.6 90.0 46.1 89.3 47.6 88.5 49.0 87.6 50.4 86.8 51.9 85.9 53.3 85.0 54.7 84.1 56.1 83.2 57.5 82.3 58.8 81.4 60.2 80.5 61.5 79.6 62.8 78.6 64.1 77.6 65.4 76.5 66.7 75.5 68.0 74.4 69.3 73.3 70.6 72.2 71.9	92.4 43.6 91.7 45.1 90.9 46.6 90.2 48.1 89.4 49.5 88.5 50.9 87.6 52.4 86.8 53.8 85.9 55.2 85.0 56.6 84.1 58.0 83.2 59.3 82.3 60.7 81.4 62.0 80.5 63.3 79.6 64.6 78.6 65.9 77.6 67.2 76.5 68.5 75.5 69.8 74.4 71.1 73.3 72.4	93.3 44.1 92.6 45.6 91.8 47.1 91.1 48.6 90.3 49.9 89.4 51.4 88.5 52.8 87.6 54.2 86.8 55.6 85.9 57.0 85.0 58.4 84.1 59.7 83.2 61.1 82.3 62.4 81.4 63.7 80.5 65.0 79.6 66.3 78.6 67.6 77.6 68.9 76.5 70.2 75.5 71.5 74.4 72.8 73.3 74.1	94.2 44.6 93.5 46.1 92.7 47.6 92.0 49.1 91.2 50.4 90.3 51.9 89.4 53.3 88.5 54.7 87.6 56.1 86.8 57.5 85.9 58.9 85.0 60.2 84.1 61.6 83.2 62.9 82.3 64.3 81.4 65.6 80.5 66.9 79.6 68.2 78.6 69.5 77.6 70.8 76.5 72.1 75.5 73.4 74.4 74.7	95.1 45.1 94.4 46.6 93.6 48.1 92.9 49.6 92.1 50.9 91.2 52.4 90.3 53.8 89.4 55.2 88.5 56.6 87.6 58.0 86.8 59.4 85.9 60.7 85.0 62.1 84.1 63.4 83.2 64.8 82.3 66.1 81.4 67.4 80.5 68.7 79.6 70.0 78.6 71.3 77.6 72.6 76.5 73.9 75.5 75.2 74.4 76.5	96.0 45.6 95.3 47.1 94.5 48.6 93.8 50.1 93.0 51.4 92.1 52.9 91.2 54.3 90.3 55.7 89.4 57.1 88.5 58.5 87.6 59.9 86.8 61.2 85.9 62.6 85.0 63.9 84.1 65.3 83.2 66.6 82.3 67.9 81.4 69.2 80.5 70.5 79.6 71.8 78.6 73.1 77.6 74.4 76.5 75.7 75.5 77.0	96.9 46.1 96.2 47.6 95.4 49.1 94.7 50.6 93.9 51.9 93.0 53.4 92.1 54.8 91.2 56.2 90.3 57.6 89.4 59.0 88.5 60.4 87.6 61.7 86.8 63.1 85.9 64.4 85.0 65.8 84.1 67.1 83.2 68.4 82.3 69.7 81.4 71.0 80.5 72.3 79.6 73.6 78.6 74.9 77.6 76.2 76.5 77.5 75.5 78.8	97.8 46.6 97.1 48.1 96.3 49.6 95.6 51.1 94.8 52.4 93.9 53.9 93.0 55.3 92.1 56.7 91.2 58.1 90.3 59.5 89.4 60.9 88.5 62.2 87.6 63.6 86.8 64.9 85.9 66.3 85.0 67.6 84.1 68.9 83.2 70.2 82.3 71.5 81.4 72.8 80.5 74.1 79.6 75.4 78.6 76.7 77.6 78.0 76.5 79.3	98.7 47.1 98.0 48.6 97.2 50.1 96.5 51.6 95.7 52.9 94.8 54.4 93.9 55.8 93.0 57.2 92.1 58.6 91.2 60.0 90.3 61.4 89.4 62.

Traverse Table.

(x.)

Distance. 97			98		99		100		101		102		103		104		
Crs.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Crs.
1	96.9	04.8	97.9	04.8	98.9	04.9	99.9	04.9	100.9	05.0	101.9	05.0	102.9	05.1	103.9	05.1	7
	96.5	09.5	97.5	09.6	98.5	09.7	99.5	09.8	100.5	09.9	101.5	10.0	102.5	10.1	103.5	10.2	4
	95.9	14.2	96.9	14.4	97.9	14.5	98.9	14.7	99.9	14.8	100.9	15.0	101.9	15.1	102.9	15.3	4
	95.1	18.9	96.1	19.1	97.1	19.3	98.1	19.5	99.1	19.7	100.0	19.9	101.0	20.1	102.0	20.3	7
2	91.1	23.6	95.1	23.8	96.0	24.1	97.0	24.3	98.0	24.5	98.9	24.8	99.9	25.0	100.9	25.3	3
	92.8	28.2	93.8	28.4	94.7	28.7	95.7	29.0	96.7	29.3	97.6	29.6	98.6	29.9	99.5	30.2	4
	91.3	32.7	92.3	33.0	93.2	33.3	94.2	33.7	95.1	34.0	96.0	34.4	97.0	34.7	97.9	35.0	4
	89.6	37.1	90.5	37.5	91.5	37.9	92.4	38.3	93.3	38.7	94.2	39.0	95.2	39.4	96.1	39.8	6
3	87.7	41.5	88.6	41.9	89.5	42.3	90.4	42.8	91.3	43.2	92.2	43.6	93.1	44.0	94.0	44.5	4
	85.6	45.7	86.4	46.2	87.3	46.7	88.2	47.1	89.1	47.6	90.0	48.1	90.8	48.5	91.7	49.0	4
	83.2	49.9	84.1	50.4	84.9	50.9	85.8	51.4	86.6	51.9	87.5	52.4	88.3	52.9	89.2	53.5	5
	80.6	53.9	81.5	54.4	82.3	55.0	83.1	55.6	84.0	56.1	84.8	56.7	85.6	57.2	86.5	57.8	5
4	77.9	57.8	78.7	58.4	79.5	59.0	80.3	59.6	81.1	60.2	81.9	60.8	82.7	61.4	83.5	62.0	3
	75.0	61.5	75.7	62.2	76.5	62.8	77.3	63.4	78.1	64.1	78.8	64.7	79.6	65.3	80.4	66.0	4
	71.9	65.1	72.6	65.8	73.3	66.5	74.1	67.2	74.8	67.8	75.6	68.5	76.3	69.2	77.1	69.8	4
	68.6	68.6	69.3	69.3	70.0	70.0	70.7	70.7	71.4	71.4	72.1	72.1	72.8	72.8	73.5	73.5	4
10	97.0	01.7	98.0	01.7	99.0	01.7	100.0	01.7	101.0	01.8	102.0	01.8	103.0	01.8	104.0	01.8	899
2	96.9	03.4	97.9	03.4	98.9	03.5	99.9	03.5	100.9	03.5	101.9	03.6	102.9	03.6	103.9	03.6	88
3	96.9	05.1	97.9	05.1	98.9	05.2	99.9	05.2	100.9	05.3	101.9	05.3	102.9	05.4	103.9	05.4	87
4	96.8	06.8	97.8	06.8	98.8	06.9	99.8	07.0	100.8	07.0	101.8	07.1	102.7	07.2	103.7	07.3	86
5	96.6	08.5	97.6	08.5	98.6	08.6	99.6	08.7	100.6	08.8	101.6	08.9	102.6	09.0	103.6	09.1	85
6	96.5	10.1	97.5	10.2	98.5	10.3	99.5	10.5	100.4	10.6	101.4	10.7	102.4	10.8	103.4	10.9	84
7	96.3	11.8	97.3	11.9	98.3	12.1	99.3	12.2	100.2	12.3	101.2	12.4	102.2	12.6	103.2	12.7	83
8	96.1	13.5	97.0	13.6	98.0	13.8	99.0	13.9	100.0	14.1	101.0	14.2	102.0	14.3	103.0	14.5	82
9	95.8	15.2	96.8	15.3	97.8	15.5	98.8	15.6	99.8	15.8	100.7	16.0	101.7	16.1	102.7	16.3	81
10	95.5	16.8	96.5	17.0	97.5	17.2	98.5	17.4	99.5	17.5	100.5	17.7	101.4	17.9	102.4	18.1	80
11	95.2	18.5	96.2	18.7	97.2	18.9	98.2	19.1	99.1	19.3	100.1	19.5	101.1	19.7	102.1	19.8	79
12	94.9	20.2	95.9	20.4	96.8	20.6	97.8	20.8	98.8	21.0	99.8	21.2	100.7	21.4	101.7	21.6	78
13	94.5	21.8	95.5	22.0	96.5	22.3	97.4	22.5	98.4	22.7	99.4	22.9	100.4	23.2	101.3	23.4	77
14	94.1	23.5	95.1	23.7	96.1	24.0	97.0	24.2	98.0	24.4	99.0	24.7	99.9	24.9	100.9	25.2	76
15	93.7	25.1	94.7	25.4	95.6	25.6	96.6	25.9	97.6	26.1	98.5	26.4	99.5	26.7	100.5	26.9	75
16	93.2	26.7	94.2	27.0	95.2	27.3	96.1	27.6	97.1	27.8	98.0	28.1	99.0	28.4	100.0	28.7	74
17	92.8	28.4	93.7	28.7	94.7	28.9	95.6	29.2	96.6	29.5	97.5	29.8	98.5	30.1	99.5	30.4	73
18	92.3	30.0	93.2	30.3	94.2	30.6	95.1	30.9	96.1	31.2	97.0	31.5	98.0	31.8	98.9	32.1	72
19	91.7	31.6	92.7	31.9	93.6	32.2	94.6	32.6	95.5	32.9	96.4	33.2	97.4	33.5	98.3	33.9	71
20	91.2	33.2	92.1	33.5	93.0	33.9	94.0	34.2	94.9	34.5	95.8	34.9	96.8	35.2	97.7	35.6	70
21	90.6	34.8	91.5	35.1	92.4	35.5	93.4	35.8	94.3	36.2	95.2	36.6	96.2	36.9	97.1	37.3	69
22	89.9	36.3	90.9	36.7	91.8	37.1	92.7	37.5	93.6	37.8	94.6	38.2	95.5	38.6	96.4	39.0	68
23	89.3	37.9	90.2	38.3	91.1	38.7	92.1	39.1	93.0	39.5	93.9	39.9	94.8	40.2	95.7	40.6	67
24	88.6	39.5	89.5	39.9	90.4	40.3	91.4	40.7	92.3	41.1	93.2	41.5	94.1	41.9	95.0	42.3	66
25	87.9	41.0	88.8	41.4	89.7	41.8	90.6	42.3	91.5	42.7	92.4	43.1	93.3	43.5	94.3	44.0	65
26	87.2	42.5	88.1	43.0	89.0	43.4	89.9	43.8	90.8	44.3	91.7	44.7	92.6	45.2	93.5	45.6	64
27	86.4	44.0	87.3	44.5	88.2	44.9	89.1	45.4	90.0	45.9	90.9	46.3	91.8	46.8	92.7	47.2	63
28	85.6	45.5	86.5	46.0	87.4	46.5	88.3	46.9	89.2	47.4	90.1	47.9	90.9	48.4	91.8	48.8	62
29	84.8	47.0	85.7	47.5	86.6	48.0	87.5	48.5	88.3	49.0	89.2	49.5	90.1	49.9	91.0	50.4	61
30	84.0	48.5	84.9	49.0	85.7	49.5	86.6	50.0	87.5	50.5	88.3	51.0	89.2	51.5	90.1	52.0	60
31	83.1	50.0	84.0	50.5	84.9	51.0	85.7	51.5	86.6	52.0	87.4	52.5	88.3	53.0	89.1	53.6	59
32	82.3	51.4	83.1	51.9	84.0	52.5	84.8	53.0	85.7	53.5	86.5	54.1	87.3	54.6	88.2	55.1	58
33	81.4	52.8	82.2	53.4	83.0	53.9	83.9	54.5	84.7	55.0	85.5	55.6	86.4	56.1	87.2	56.6	57
34	80.4	54.2	81.2	54.8	82.1	55.4	82.9	55.9	83.7	56.5	84.6	57.0	85.4	57.6	86.2	58.2	56
35	79.5	55.6	80.3	56.2	81.1	56.8	81.9	57.4	82.7	57.9	83.6	58.5	84.4	59.1	85.2	59.7	55
36	78.5	57.0	79.3	57.6	80.1	58.2	80.9	58.8	81.7	59.4	82.5	60.0	83.3	60.5	84.1	61.1	54
37	77.5	58.4	78.3	59.0	79.1	59.6	79.9	60.2	80.7	60.8	81.5	61.4	82.3	62.0	83.1	62.6	53
38	76.4	59.7	77.2	60.3	78.0	61.0	78.8	61.6	79.6	62.2	80.4	62.8	81.2	63.4	82.0	64.0	52
39	75.4	61.0	76.2	61.7	76.9	62.3	77.7	62.9	78.5	63.6	79.3	64.2	80.0	64.8	80.8	65.4	51
40	74.3	62.4	75.1	63.0	75.8	63.6	76.6	64.3	77.4	64.9	78.1	65.6	78.9	66.2	79.7	66.8	50
41	73.2	63.6	74.0	64.3	74.7	64.9	75.5	65.6	76.2	66.3	77.0	66.9	77.7	67.6	78.5	68.2	49
42	72.1	64.9	72.8	65.6	73.6	66.2	74.3	66.9	75.1	67.6	75.8	68.3	76.5	68.9	77.3	69.6	48
43	70.9	66.2	71.7	66.8	72.4	67.5	73.1	68.2	73.9	68.9	74.6	69.6	75.3	70.2	76.1	70.9	47
44	69.8	67.4	70.5	68.1	71.2	68.8	71.9	69.5	72.7	70.2	73.4	70.9	74.1	71.5	74.8	72.2	46
45	68.6	68.6	69.3	69.3	70.0	70.0	70.7	70.7	71.4	71.4	72.1	72.1	72.8	72.8	73.5	73.5	45
Crs.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Crs.

Traverse Table.

(x.)

Distance. 105			106			107			108			109			110			111			112		
Course	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Course		
1	104.9	05.2	105.9	05.1	106.9	05.3	107.9	05.3	108.9	05.4	109.9	05.4	110.9	05.5	111.9	05.5	112.9	05.5	113.9	05.5	1		
2	104.5	10.3	105.5	10.1	106.5	10.5	107.5	10.6	108.5	10.7	109.5	10.8	110.5	10.8	111.5	10.8	112.5	10.8	113.5	10.8	2		
3	103.9	15.4	104.8	15.5	105.8	15.7	106.8	15.8	107.8	16.0	108.8	16.1	109.8	16.3	110.8	16.3	111.8	16.3	112.8	16.4	3		
4	103.0	20.5	104.0	20.7	104.9	20.9	105.9	21.1	106.9	21.3	107.9	21.5	108.9	21.7	109.8	21.7	110.8	21.7	111.8	21.9	4		
5	101.9	25.5	102.8	25.8	103.8	26.0	104.8	26.2	105.7	26.5	106.7	26.7	107.7	27.0	108.6	27.2	109.6	27.2	110.6	27.2	5		
6	100.5	30.5	101.4	30.8	102.4	31.1	103.4	31.4	104.3	31.6	105.3	31.9	106.2	32.2	107.2	32.5	108.2	32.5	109.2	32.5	6		
7	98.9	35.4	99.8	35.7	100.7	36.0	101.7	36.4	102.6	36.7	103.6	37.1	104.5	37.4	105.4	37.7	106.4	37.7	107.4	37.7	7		
8	97.0	40.2	97.9	40.6	98.9	41.0	99.8	41.3	100.7	41.7	101.6	42.1	102.6	42.5	103.5	42.9	104.5	42.9	105.5	42.9	8		
9	94.9	44.9	95.8	45.3	96.7	45.8	97.6	46.2	98.5	46.6	99.4	47.0	100.3	47.5	101.2	47.9	102.2	47.9	103.2	47.9	9		
10	92.6	49.5	93.5	50.0	94.4	50.4	95.3	50.9	96.1	51.4	97.0	51.8	97.9	52.3	98.8	52.8	99.8	52.8	100.8	52.8	10		
11	90.1	54.0	90.9	54.5	91.8	55.0	92.6	55.5	93.5	56.0	94.3	56.5	95.2	57.1	96.1	57.6	97.1	57.6	98.1	57.6	11		
12	87.3	58.3	88.1	58.9	89.0	59.4	89.8	60.0	90.6	60.6	91.5	61.1	92.3	61.7	93.1	62.2	94.1	62.2	95.1	62.2	12		
13	84.3	62.6	85.1	63.1	85.9	63.7	86.7	64.3	87.5	64.9	88.4	65.5	89.2	66.1	90.0	66.7	91.0	66.7	92.0	66.7	13		
14	81.2	66.6	81.9	67.2	82.7	67.9	83.5	68.5	84.3	69.1	85.0	69.8	85.8	70.4	86.6	71.0	87.5	71.0	88.5	71.0	14		
15	77.3	70.5	78.5	71.2	79.3	71.8	80.0	72.5	80.8	73.2	81.5	73.9	82.2	74.5	83.0	75.2	84.5	75.2	85.5	75.2	15		
16	74.2	74.2	75.0	75.0	75.7	75.7	76.4	76.4	77.1	77.1	77.8	77.8	78.5	79.2	79.2	79.2	80.0	79.2	80.0	79.2	16		
17	105.0	01.8	106.0	01.8	107.0	01.9	108.0	01.9	109.0	01.9	110.0	01.9	111.0	01.9	112.								

Traverse Table.

(x.)

Distance. 113		114		115		116		117		118		119		120	
Crs.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Crs.	Fix.
1	112.9 05.5	113.9 05.6	114.9 05.6	115.9 05.7	116.9 05.7	117.9 05.7	118.9 05.8	119.9 05.9	120.9 05.9	121.9 05.9	122.9 05.9	123.9 05.9	124.9 05.9	7	72
2	112.5 11.1	113.5 11.2	114.5 11.3	115.5 11.4	116.5 11.4	117.5 11.5	118.5 11.6	119.5 11.7	120.5 11.7	121.5 11.8	122.5 11.8	123.5 11.8	124.5 11.8	8	73
3	111.8 16.6	112.8 16.7	113.8 16.7	114.8 16.9	115.8 17.0	116.8 17.2	117.8 17.3	118.8 17.5	119.8 17.6	120.8 17.6	121.8 17.7	122.8 17.7	123.8 17.7	9	74
4	110.8 22.0	111.8 22.2	112.8 22.4	113.8 22.6	114.7 22.8	115.7 23.0	116.7 23.2	117.7 23.4	118.7 23.4	119.7 23.5	120.7 23.5	121.7 23.5	122.7 23.5	10	75
5	109.6 27.5	110.6 27.7	111.6 27.9	112.5 28.2	113.5 28.4	114.5 28.7	115.4 28.9	116.4 29.2	117.4 29.2	118.4 29.3	119.4 29.3	120.4 29.3	121.4 29.3	11	76
6	108.1 32.8	109.1 33.1	110.1 33.4	111.0 33.7	112.0 34.0	112.9 34.2	113.9 34.5	114.8 34.8	115.8 34.8	116.8 34.9	117.8 34.9	118.8 34.9	119.8 34.9	12	77
7	106.4 38.1	107.3 38.4	108.3 38.7	109.2 39.1	110.2 39.4	111.1 39.7	112.0 40.1	113.0 40.4	114.0 40.4	115.0 40.5	116.0 40.5	117.0 40.5	118.0 40.5	13	78
8	104.4 43.2	105.3 43.6	106.3 44.0	107.2 44.4	108.1 44.8	109.0 45.2	109.9 45.5	110.9 45.9	111.9 45.9	112.9 46.0	113.9 46.0	114.9 46.0	115.9 46.0	14	79
9	102.1 48.3	103.1 48.7	104.0 49.2	104.9 49.6	105.8 50.0	106.7 50.5	107.6 50.9	108.5 51.3	109.5 51.3	110.5 51.4	111.5 51.4	112.5 51.4	113.5 51.4	15	80
10	99.7 53.3	100.5 53.7	101.4 54.2	102.3 54.7	103.2 55.1	104.1 55.6	105.0 56.1	105.9 56.6	106.9 56.6	107.9 56.7	108.9 56.7	109.9 56.7	110.9 56.7	16	81
11	96.9 58.1	97.8 58.6	98.6 59.1	99.5 59.6	100.4 60.1	101.2 60.7	102.1 61.2	102.9 61.7	103.9 61.7	104.9 61.8	105.9 61.8	106.9 61.8	107.9 61.8	17	82
12	94.0 62.8	94.8 63.3	95.6 63.9	96.4 64.4	97.3 65.0	98.1 65.6	98.9 66.1	99.8 66.7	100.8 66.7	101.8 66.8	102.8 66.8	103.8 66.8	104.8 66.8	18	83
13	90.8 67.3	91.6 67.9	92.4 68.5	93.2 69.1	94.0 69.7	94.8 70.3	95.6 70.9	96.4 71.5	97.4 71.5	98.4 71.6	99.4 71.6	100.4 71.6	101.4 71.6	19	84
14	87.3 71.7	88.1 72.3	88.9 73.0	89.7 73.6	90.4 74.2	91.2 74.9	92.0 75.5	92.8 76.1	93.8 76.1	94.8 76.2	95.8 76.2	96.8 76.2	97.8 76.2	20	85
15	83.7 75.9	84.5 76.5	85.2 77.2	85.9 77.9	86.7 78.6	87.4 79.2	88.2 79.9	88.9 80.6	89.9 80.6	90.9 80.7	91.9 80.7	92.9 80.7	93.9 80.7	21	86
16	79.9 79.9	80.6 80.6	81.3 81.3	82.0 82.0	82.7 82.7	83.4 83.4	84.1 84.1	84.8 84.8	85.8 84.8	86.8 84.9	87.8 84.9	88.8 84.9	89.8 84.9	22	87
17	113.0 02.0	114.0 02.0	115.0 02.0	116.0 02.0	117.0 02.0	118.0 02.1	119.0 02.1	120.0 02.1	121.0 02.1	122.0 02.1	123.0 02.1	124.0 02.1	125.0 02.1	23	88
18	112.9 03.9	113.9 04.0	114.9 04.0	115.9 04.0	116.9 04.1	117.9 04.1	118.9 04.2	119.9 04.2	120.9 04.2	121.9 04.2	122.9 04.2	123.9 04.2	124.9 04.2	24	89
19	112.8 05.9	113.8 06.0	114.8 06.0	115.8 06.1	116.8 06.1	117.8 06.2	118.8 06.2	119.8 06.3	120.8 06.3	121.8 06.3	122.8 06.3	123.8 06.3	124.8 06.3	25	90
20	112.7 07.9	113.7 08.0	114.7 08.0	115.7 08.1	116.7 08.2	117.7 08.2	118.7 08.3	119.7 08.3	120.7 08.3	121.7 08.3	122.7 08.3	123.7 08.3	124.7 08.3	26	91
21	112.6 09.8	113.6 09.9	114.6 10.0	115.6 10.1	116.6 10.2	117.6 10.3	118.5 10.4	119.5 10.5	120.5 10.5	121.5 10.5	122.5 10.5	123.5 10.5	124.5 10.5	27	92
22	112.4 11.8	113.4 11.9	114.4 12.0	115.4 12.1	116.4 12.2	117.4 12.3	118.3 12.4	119.3 12.5	120.3 12.5	121.3 12.5	122.3 12.5	123.3 12.5	124.3 12.5	28	93
23	112.2 13.8	113.2 13.9	114.1 14.0	115.1 14.1	116.1 14.3	117.1 14.4	118.1 14.5	119.1 14.6	120.1 14.6	121.1 14.6	122.1 14.6	123.1 14.6	124.1 14.6	29	94
24	111.9 15.7	112.9 15.9	113.9 16.0	114.9 16.1	115.9 16.3	116.9 16.4	117.8 16.5	118.8 16.6	119.8 16.6	120.8 16.6	121.8 16.6	122.8 16.6	123.8 16.6	30	95
25	111.6 17.7	112.6 17.8	113.6 18.0	114.6 18.1	115.6 18.3	116.5 18.5	117.5 18.6	118.5 18.8	119.5 18.8	120.5 18.8	121.5 18.8	122.5 18.8	123.5 18.8	31	96
26	111.3 19.6	112.3 19.8	113.3 20.0	114.2 20.1	115.2 20.3	116.2 20.5	117.2 20.7	118.2 20.8	119.2 20.8	120.2 20.8	121.2 20.8	122.2 20.8	123.2 20.8	32	97
27	110.9 21.6	111.9 21.8	112.9 22.1	113.9 22.1	114.9 22.3	115.8 22.5	116.8 22.7	117.8 22.9	118.8 22.9	119.8 22.9	120.8 22.9	121.8 22.9	122.8 22.9	33	98
28	110.5 23.5	111.5 23.7	112.5 23.9	113.5 24.1	114.4 24.3	115.4 24.5	116.4 24.7	117.4 24.9	118.4 24.9	119.4 24.9	120.4 24.9	121.4 24.9	122.4 24.9	34	99
29	110.1 25.4	111.1 25.6	112.1 25.9	113.0 26.1	114.0 26.3	115.0 26.5	116.0 26.8	116.9 27.0	117.9 27.0	118.9 27.0	119.9 27.0	120.9 27.0	121.9 27.0	35	100
30	109.6 27.3	110.6 27.6	111.6 27.8	112.6 28.1	113.5 28.3	114.5 28.6	115.5 28.8	116.5 29.0	117.5 29.0	118.5 29.0	119.5 29.0	120.5 29.0	121.5 29.0	36	101
31	109.1 29.2	110.1 29.5	111.1 29.8	112.0 30.0	113.0 30.3	114.0 30.5	114.9 30.8	115.9 31.1	116.9 31.1	117.9 31.1	118.9 31.1	119.9 31.1	120.9 31.1	37	102
32	108.6 31.1	109.6 31.4	110.5 31.7	111.5 32.0	112.5 32.2	113.4 32.5	114.4 32.8	115.4 33.1	116.4 33.1	117.4 33.1	118.4 33.1	119.4 33.1	120.4 33.1	38	103
33	108.1 33.0	109.0 33.3	110.0 33.6	110.9 33.9	111.9 34.2	112.8 34.5	113.8 34.8	114.8 35.1	115.8 35.1	116.8 35.1	117.8 35.1	118.8 35.1	119.8 35.1	39	104
34	107.5 34.9	108.4 35.2	109.4 35.5	110.3 35.8	111.3 36.2	112.2 36.5	113.2 36.8	114.1 37.1	115.1 37.1	116.1 37.1	117.1 37.1	118.1 37.1	119.1 37.1	40	105
35	106.8 36.8	107.8 37.1	108.7 37.4	109.7 37.8	110.6 38.1	111.6 38.4	112.5 38.7	113.5 39.1	114.5 39.1	115.5 39.1	116.5 39.1	117.5 39.1	118.5 39.1	41	106
36	106.2 38.6	107.1 39.0	108.1 39.3	109.0 39.7	109.9 40.0	110.9 40.4	111.8 40.7	112.8 41.0	113.8 41.0	114.8 41.0	115.8 41.0	116.8 41.0	117.8 41.0	42	107
37	105.5 40.5	106.4 40.9	107.4 41.2	108.3 41.6	109.2 41.9	110.2 42.3	111.1 42.6	112.0 43.0	113.0 43.0	114.0 43.0	115.0 43.0	116.0 43.0	117.0 43.0	43	108
38	104.8 42.3	105.7 42.7	106.6 43.1	107.6 43.5	108.5 43.8	109.4 44.2	110.3 44.6	111.3 45.0	112.3 45.0	113.3 45.0	114.3 45.0	115.3 45.0	116.3 45.0	44	109
39	104.0 44.2	104.9 44.5	105.9 44.9	106.8 45.3	107.7 45.7	108.6 46.1	109.5 46.5	110.5 46.9	111.5 46.9	112.5 46.9	113.5 46.9	114.5 46.9	115.5 46.9	45	110
40	103.2 46.0	104.1 46.4	105.1 46.8	106.0 47.2	106.9 47.6	107.8 48.0	108.7 48.4	109.6 48.8	110.6 48.8	111.6 48.8	112.6 48.8	113.6 48.8	114.6 48.8	46	111
41	102.4 47.8	103.3 48.2	104.2 48.6	105.1 49.0	106.0 49.4	106.9 49.9	107.9 50.3	108.8 50.7	109.8 50.7	110.8 50.7	111.8 50.7	112.8 50.7	113.8 50.7	47	112
42	101.6 49.5	102.5 50.0	103.4 50.4	104.3 50.9	105.2 51.3	106.1 51.7	107.0 52.2	107.9 52.6	108.9 52.6	109.9 52.6	110.9 52.6	111.9 52.6	112.9 52.6	48	113
43	100.7 51.3	101.6 51.8	102.5 52.2	103.4 52.7	104.2 53.1	105.1 53.6	106.0 54.0	106.9 54.5	107.9 54.5	108.9 54.5	109.9 54.5	110.9 54.5	111.9 54.5	49	114
44	99.8 53.1	100.7 53.5	101.5 54.0	102.4 54.5	103.3 54.9	104.2 55.4	105.1 55.9	106.0 56.3	107.0 56.3	108.0 56.3	109.0 56.3	110.0 56.3	111.0 56.3	50	115
45	98.8 54.8	99.7 55.3	100.6 55.8	101.5 56.2	102.3 56.7	103.2 57.2	104.1 57.7	105.0 58.2	106.0 58.2	107.0 58.2	108.0 58.2	109.0 58.2	110.0 58.2	51	116
46	97.9 56.5	98.7 57.0	99.6 57.5	100.5 58.0	101.3 58.5	102.2 59.0	103.1 59.5	104.0 60.0	105.0 60.0	106.0 60.0	107.0 60.0	108.0 60.0	109.0 60.0	52	117
47	96.9 58.2	97.7 58.7	98.6 59.2	99.4 59.7	100.3 60.3	101.1 60.8	102.0 61.3	102.9 61.8	103.9 61.8	104.9 61.8	105.9 61.8	106.9 61.8	107.9 61.8	53	118
48	95.8 59.9	96.7 60.4	97.5 60.9	98.4 61.5	99.2 62.0	100.1 62.5	100.9 63.1	101.8 63.6	102.8 63.6	103.8 63.6	104.8 63.6	105.8 63.6	106.8 63.6	54	119
49	94.8 61.5	95.6 62.1	96.4 62.6	97.3 63.2	98.1 63.7	99.0 64.3	99.8 64.8	100.8 65.4	101.8 65.4	102.8 65.4	103.8 65.4	104.8 65.4	105.8 65.4	55	120
50	93.7 63.2	94.5 63.7	95.3 64.3	96.2 64.9	97.0 65.4	97.8 66.0	98.7 66.5	99.5 67.1	100.5 67.1	101.5 67.1	102.5 67.1	103.5 67.1	104.5 67.1	56	121
51	92.6 64.8	93.4 65.4	94.2 66.0	95.0 66.5	95.8 67.1	96.7 67.7	97.5 68.3	98.3 68.8	99.3 68.8	100.3 68.8	101.3 68.8	102.3 68.8	103.3 68.8	57	122
52	91.4 66.4	92.2 67.0	93.0 67.6	93.8 68.2	94.7 68.8	95.5 69.4	96.3 69.9	97.1 70.5	98.1 70.5	99.1 70.5	100.1 70.5	101.1 70.5	102.1 70.5	58	123
53	90.2 68.0	91.0 68.6	91.8 69.2	92.6 69.8	93.4 70.4	94.2 71.0	95.0 71.6	95.8 72.2	96.8 72.2	97.8 72.2	98.8 72.2	99.8 72.2	100.8 72.2	59	124
54	89.0 69.6	89.8 70.2	90.6 70.8	91.4 71.4	92.2 72.0	93.0 72.6	93.8 73.3	94.6 73.9	95.6 73.9	96.6 73.9	97.6 73.9	98.6 73.9	99.6 73.9	60	125
55	87.8 71.1	88.6 71.7	89.4 72.4	90.1											

Traverse Table.

(x.)

Distance.		121	122	123	124	125	126	127	128		
Cross.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Cross.	Dist.
1	120.9 05.9	121.9 06.0	122.9 06.0	123.9 06.1	124.9 06.1	125.8 06.2	126.8 06.2	127.8 06.3	128.8 06.3	7 1/2	7 1/2
2	120.4 11.9	121.4 12.0	122.4 12.1	123.4 12.2	124.4 12.3	125.4 12.3	126.4 12.4	127.4 12.5	128.4 12.5	7 1/2	7 1/2
3	119.7 17.7	120.7 17.9	121.7 18.0	122.7 18.2	123.6 18.3	124.6 18.5	125.6 18.6	126.6 18.8	127.6 18.8	7 1/2	7 1/2
4	118.7 23.6	119.7 23.8	120.6 24.0	121.6 24.2	122.6 24.4	123.6 24.6	124.6 24.8	125.5 25.0	126.5 25.0	7 1/2	7 1/2
5	117.4 29.4	118.3 29.6	119.3 29.9	120.3 30.1	121.3 30.4	122.2 30.6	123.2 30.9	124.2 31.1	125.2 31.2	7 1/2	7 1/2
6	115.8 35.1	116.8 35.4	117.7 35.7	118.7 36.0	119.6 36.3	120.6 36.6	121.5 36.9	122.5 37.2	123.5 37.2	7 1/2	7 1/2
7	113.9 40.8	114.9 41.1	115.8 41.4	116.7 41.8	117.7 42.1	118.6 42.4	119.6 42.8	120.5 43.1	121.5 43.1	7 1/2	7 1/2
8	111.8 46.3	112.7 46.7	113.6 47.1	114.6 47.5	115.5 47.8	116.4 48.2	117.3 48.6	118.3 49.0	119.3 49.0	7 1/2	7 1/2
9	109.4 51.7	110.3 52.2	111.2 52.6	112.1 53.0	113.0 53.5	113.9 53.9	114.8 54.3	115.7 54.7	116.7 54.7	7 1/2	7 1/2
10	106.7 57.0	107.6 57.5	108.5 58.0	109.4 58.4	110.2 58.9	111.1 59.4	112.0 59.9	112.9 60.3	113.9 60.3	7 1/2	7 1/2
11	103.8 62.2	104.6 62.7	105.5 63.2	106.4 63.7	107.2 64.3	108.1 64.8	108.9 65.3	109.8 65.8	110.8 65.8	7 1/2	7 1/2
12	100.6 67.2	101.4 67.8	102.3 68.3	103.1 68.9	103.9 69.4	104.8 70.0	105.6 70.6	106.4 71.1	107.3 71.1	7 1/2	7 1/2
13	97.2 72.1	98.0 72.7	98.8 73.3	99.6 73.9	100.4 74.5	101.2 75.1	102.0 75.7	102.8 76.3	103.7 76.3	7 1/2	7 1/2
14	93.5 76.8	94.3 77.4	95.1 78.0	95.9 78.7	96.7 79.3	97.4 79.9	98.2 80.6	99.0 81.2	100.0 81.2	7 1/2	7 1/2
15	89.6 81.3	90.4 81.9	91.1 82.6	91.9 83.3	92.6 83.9	93.4 84.6	94.1 85.3	94.8 86.0	95.7 86.0	7 1/2	7 1/2
16	85.6 85.6	86.3 86.3	87.0 87.0	87.7 87.7	88.4 88.4	89.1 89.1	89.8 89.8	90.5 90.5	91.3 90.5	7 1/2	7 1/2
17	121.0 02.1	122.0 02.1	123.0 02.1	124.0 02.2	125.0 02.2	126.0 02.2	127.0 02.2	128.0 02.2	129.0 02.2	8 1/2	8 1/2
18	120.9 04.2	121.9 04.3	122.9 04.3	123.9 04.3	124.9 04.4	125.9 04.4	126.9 04.4	127.9 04.5	128.9 04.5	8 1/2	8 1/2
19	120.8 06.3	121.8 06.4	122.8 06.4	123.8 06.5	124.8 06.5	125.8 06.6	126.8 06.6	127.8 06.7	128.8 06.7	8 1/2	8 1/2
20	120.7 08.4	121.7 08.5	122.7 08.6	123.7 08.6	124.7 08.7	125.7 08.8	126.7 08.9	127.7 08.9	128.7 09.0	8 1/2	8 1/2
21	120.5 10.5	121.5 10.6	122.5 10.7	123.5 10.8	124.5 10.9	125.5 11.0	126.5 11.1	127.5 11.2	128.5 11.2	8 1/2	8 1/2
22	120.3 12.6	121.3 12.8	122.3 12.9	123.3 13.0	124.3 13.1	125.3 13.2	126.3 13.3	127.3 13.4	128.3 13.4	8 1/2	8 1/2
23	120.1 14.7	121.1 14.9	122.1 15.0	123.1 15.1	124.1 15.2	125.1 15.4	126.1 15.5	127.1 15.7	128.1 15.8	8 1/2	8 1/2
24	119.8 16.8	120.8 17.0	121.8 17.1	122.8 17.3	123.8 17.4	124.8 17.5	125.8 17.7	126.8 17.8	127.8 17.8	8 1/2	8 1/2
25	119.5 18.9	120.5 19.1	121.5 19.2	122.5 19.4	123.5 19.6	124.4 19.7	125.4 19.9	126.4 20.0	127.4 20.0	8 1/2	8 1/2
26	119.2 21.0	120.2 21.2	121.2 21.4	122.2 21.5	123.1 21.7	124.1 21.9	125.1 22.1	126.1 22.2	127.1 22.2	8 1/2	8 1/2
27	118.8 23.1	119.8 23.3	120.7 23.5	121.7 23.7	122.7 23.9	123.7 24.0	124.7 24.2	125.6 24.4	126.6 24.4	8 1/2	8 1/2
28	118.4 25.2	119.3 25.4	120.3 25.6	121.3 25.8	122.3 26.0	123.2 26.2	124.2 26.4	125.2 26.6	126.2 26.6	8 1/2	8 1/2
29	117.9 27.2	118.9 27.4	119.8 27.7	120.8 27.9	121.8 28.1	122.8 28.3	123.7 28.6	124.7 28.8	125.7 28.8	8 1/2	8 1/2
30	117.4 29.3	118.4 29.5	119.3 29.8	120.3 30.0	121.3 30.2	122.3 30.5	123.2 30.7	124.2 31.0	125.2 31.0	8 1/2	8 1/2
31	116.9 31.3	117.8 31.6	118.8 31.8	119.8 32.1	120.7 32.4	121.7 32.6	122.7 32.9	123.6 33.1	124.6 33.1	8 1/2	8 1/2
32	116.3 33.4	117.3 33.6	118.2 33.9	119.2 34.2	120.2 34.5	121.1 34.7	122.1 35.0	123.0 35.3	124.0 35.3	8 1/2	8 1/2
33	115.7 35.4	116.7 35.7	117.6 36.0	118.6 36.3	119.5 36.5	120.5 36.8	121.5 37.1	122.4 37.4	123.4 37.4	8 1/2	8 1/2
34	115.1 37.4	116.0 37.7	117.0 38.0	117.9 38.3	118.9 38.6	119.8 38.9	120.8 39.2	121.7 39.6	122.7 39.6	8 1/2	8 1/2
35	114.4 39.4	115.4 39.7	116.3 40.0	117.2 40.4	118.2 40.7	119.1 41.0	120.1 41.3	121.0 41.7	122.0 41.7	8 1/2	8 1/2
36	113.7 41.4	114.6 41.7	115.6 42.1	116.5 42.4	117.5 42.8	118.4 43.1	119.3 43.4	120.3 43.8	121.3 43.8	8 1/2	8 1/2
37	113.0 43.4	113.9 43.7	114.8 44.1	115.8 44.4	116.7 44.8	117.6 45.2	118.6 45.5	119.5 45.9	120.5 45.9	8 1/2	8 1/2
38	112.2 45.3	113.1 45.7	114.0 46.1	115.0 46.5	115.9 46.8	116.8 47.2	117.8 47.6	118.7 47.9	119.7 47.9	8 1/2	8 1/2
39	111.4 47.3	112.3 47.7	113.2 48.1	114.1 48.5	115.1 48.8	116.0 49.2	116.9 49.6	117.8 50.0	118.8 50.0	8 1/2	8 1/2
40	110.5 49.2	111.5 49.6	112.4 50.0	113.3 50.4	114.2 50.8	115.1 51.2	116.0 51.7	116.9 52.1	117.9 52.1	8 1/2	8 1/2
41	109.7 51.1	110.6 51.6	111.5 52.0	112.4 52.4	113.3 52.8	114.2 53.2	115.1 53.7	116.0 54.1	117.0 54.1	8 1/2	8 1/2
42	108.8 53.0	109.7 53.5	110.6 53.9	111.5 54.4	112.4 54.8	113.2 55.2	114.1 55.7	115.0 56.1	116.0 56.1	8 1/2	8 1/2
43	107.8 54.9	108.7 55.4	109.6 55.8	110.5 56.3	111.4 56.7	112.3 57.2	113.2 57.7	114.0 58.1	115.0 58.1	8 1/2	8 1/2
44	106.8 56.8	107.7 57.3	108.6 57.7	109.5 58.2	110.4 58.7	111.3 59.2	112.1 59.6	113.0 60.1	114.0 60.1	8 1/2	8 1/2
45	105.8 58.7	106.7 59.1	107.6 59.6	108.5 60.1	109.3 60.6	110.2 61.1	111.1 61.6	112.0 62.1	113.0 62.1	8 1/2	8 1/2
46	104.8 60.5	105.7 61.0	106.5 61.5	107.4 62.0	108.3 62.5	109.1 63.0	110.0 63.5	110.9 64.0	111.9 64.0	8 1/2	8 1/2
47	103.7 62.3	104.6 62.8	105.4 63.3	106.3 63.9	107.1 64.4	108.0 64.9	108.9 65.4	109.7 65.9	110.7 65.9	8 1/2	8 1/2
48	102.6 64.1	103.5 64.7	104.3 65.2	105.2 65.7	106.0 66.2	106.9 66.8	107.7 67.3	108.6 67.8	109.6 67.8	8 1/2	8 1/2
49	101.5 65.9	102.3 66.4	103.2 67.0	104.0 67.5	104.8 68.1	105.7 68.6	106.5 69.2	107.3 69.7	108.3 69.7	8 1/2	8 1/2
50	100.3 67.7	101.1 68.2	102.0 68.8	102.8 69.3	103.6 69.9	104.5 70.5	105.3 71.0	106.1 71.6	107.1 71.6	8 1/2	8 1/2
51	99.1 69.4	99.9 70.0	100.8 70.5	101.6 71.1	102.4 71.7	103.2 72.3	104.0 72.8	104.9 73.4	105.9 73.4	8 1/2	8 1/2
52	97.9 71.1	98.7 71.7	99.5 72.3	100.3 72.9	101.1 73.5	101.9 74.1	102.7 74.6	103.6 75.2	104.6 75.2	8 1/2	8 1/2
53	96.6 72.8	97.4 73.4	98.2 74.0	99.0 74.6	99.8 75.2	100.6 75.8	101.4 76.4	102.2 77.0	103.2 77.0	8 1/2	8 1/2
54	95.3 74.5	96.1 75.1	96.9 75.7	97.7 76.3	98.5 77.0	99.3 77.6	100.1 78.2	100.9 78.8	101.9 78.8	8 1/2	8 1/2
55	94.0 76.1	94.8 76.8	95.6 77.4	96.4 78.0	97.1 78.7	97.9 79.3	98.7 79.9	99.5 80.6	100.5 80.6	8 1/2	8 1/2
56	92.7 77.8	93.5 78.4	94.2 79.1	95.0 79.7	95.8 80.3	96.5 81.0	97.3 81.6	98.1 82.3	99.1 82.3	8 1/2	8 1/2
57	91.3 79.4	92.1 80.0	92.8 80.7	93.6 81.4	94.3 82.0	95.1 82.7	95.8 83.3	96.6 84.0	97.6 84.0	8 1/2	8 1/2
58	89.9 81.0	90.7 81.6	91.4 82.3	92.1 83.0	92.9 83.6	93.6 84.3	94.4 85.0	95.1 85.6	96.0 85.6	8 1/2	8 1/2
59	88.5 82.5	89.2 83.2	90.0 83.9	90.7 84.6	91.4 85.2	92.2 85.9	92.9 86.6	93.6 87.3	94.5 87.3	8 1/2	8 1/2
60	87.0 84.1	87.8 84.7	88.5 85.4	89.2 86.1	89.9 86.8	90.6 87.5	91.4 88.2	92.1 88.9	93.0 88.9	8 1/2	8 1/2
61	85.6 85.6	86.3 86.3	87.0 87.0	87.7 87.7	88.4 88.4	89.1 89.1	89.8 89.8	90.5 90.5	91.3 90.5	8 1/2	8 1/2
62	84.2 87.2	85.0 87.8	85.7 88.5	86.4 89.2	87.1 89.9	87.8 90.6	88.5 91.3	89.2 92.0	90.0 92.0	8 1/2	8 1/2
63	82.8 88.8	83.6 89.4	84.3 90.1	85.0 90.8	85.7 91.5	86.4 92.2	87.1 92.9	87.8 93.6	88.6 93.6	8 1/2	8 1/2
64	81.4 90.4	82.2 91.0	82.9 91.7	83.6 92.4	84.3 93.1	85.0 93.8	85.7 94.5	86.4 95.2	87.2 95.2	8 1/2	8 1/2
65	80.0 92.0	80.8 92.6	81.5 93.3	82.2 94.0	82.9 94.7	83.6 95.4	84.3 96.1	85.0 96.8	85.8 96.8	8 1/2	8 1/2
66	78.6 93.6	79.4 94.2	80.1 94.9	80.8 95.6	81.5 96.3	82.2 97.0	82.9 97.7	83.6 98.4	84.4 98.4	8 1/2	8 1/2
67	77.2 95.2	78.0 95.8	78.7 96.5	79.4 97.2	80.1 97.9	80.8 98.6	81.5 99.3	82.2 100.0	83.0 100.0	8 1/2	8 1/2
68	75.8 96.8	76.6 97.4	77.3 98.1	78.0 98.8	78.7 99.5	79.4 100.2	80.1 100.9	80.8 101.6	81.6 101.6	8 1/2	8 1/2
69	74.4 98.4	75.2 99.0	75.9 99.7	76.6 100.4	77.3 101.1	78.0 101.8	78.7 102.5	79.4 103.2	80.2 103.2	8 1/2	8 1/2
70	73.0 100.0	73.8 100.6	74.5 101.3	75.2 102.0	75.9 102.7	76.6 103.4	77.3 104.1	78.0 104.8	78.8 104.8	8 1/2	8 1/2
71	71.6 101.6	72.4 102.2	73.1 102.9	73.8 103.6	74.5 104.3	75.2 105.0	75.9 105.7	76.6 106.4	77.4 106.4	8 1/2	8 1/2
72	70.2 103.2	71.0 103.8	71.7 104.5	72.4 105.2	73.1 105.9	73.8 106.6	74.5 107.3	75.2 108.0	76.0 108.0	8 1/2	8 1/2
73	68.8 104.8	69.6 105.4	70.3 106.1	71.0 106.8	71.7 107.5	72.4 108					

Traverse Table.

(x.)

Distance.		129		130		131		132		133		134		135		136		Crs.
Con.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Con.	
1	128.8	06.3	129.8	06.4	130.8	06.4	131.8	06.5	132.8	06.5	133.8	06.6	134.8	06.6	135.8	06.7	73	
2	128.4	12.6	129.4	12.7	130.4	12.8	131.4	12.9	132.4	13.0	133.4	13.1	134.3	13.2	135.3	13.3	74	
3	127.6	18.9	128.6	19.1	129.6	19.2	130.6	19.4	131.6	19.5	132.5	19.7	133.5	19.8	134.5	20.0	75	
4	126.5	25.2	127.5	25.4	128.5	25.6	129.5	25.8	130.4	26.0	131.4	26.1	132.4	26.3	133.4	26.5	76	
5	125.1	31.3	126.1	31.6	127.1	31.8	128.0	32.1	129.0	32.3	130.0	32.6	131.0	32.8	131.9	33.0	77	
6	123.5	37.4	124.4	37.7	125.4	38.0	126.3	38.3	127.3	38.6	128.2	38.9	129.2	39.2	130.1	39.5	78	
7	121.5	43.5	122.4	43.8	123.3	44.1	124.3	44.5	125.2	44.8	126.2	45.1	127.1	45.5	128.0	45.8	79	
8	119.2	49.4	120.1	49.8	121.0	50.1	122.0	50.5	122.9	50.9	123.8	51.3	124.7	51.7	125.7	52.0	80	
9	116.6	55.2	117.5	55.6	118.4	56.0	119.3	56.4	120.2	56.9	121.1	57.3	122.0	57.7	122.9	58.2	81	
10	113.8	60.8	114.7	61.3	115.5	61.7	116.4	62.2	117.3	62.7	118.2	63.2	119.1	63.6	119.9	64.1	82	
11	110.6	66.3	111.5	66.8	112.4	67.3	113.2	67.9	114.1	68.4	114.9	68.9	115.8	69.4	116.6	69.9	83	
12	107.3	71.7	108.1	72.2	108.9	72.8	109.7	73.3	110.6	73.9	111.4	74.4	112.2	75.0	113.1	75.6	84	
13	103.6	76.9	104.4	77.4	105.2	78.0	106.0	78.6	106.8	79.2	107.6	79.8	108.4	80.4	109.2	81.0	85	
14	99.7	81.8	100.5	82.5	101.3	83.1	102.0	83.7	102.8	84.4	103.6	85.0	104.4	85.6	105.1	86.3	86	
15	95.6	86.6	96.3	87.3	97.1	88.0	97.8	88.6	98.5	89.3	99.3	90.0	100.0	90.7	100.8	91.3	87	
16	91.2	91.2	91.9	91.9	92.6	92.6	93.3	93.3	94.0	94.0	94.8	94.8	95.5	95.5	96.2	96.2	88	
17	129.0	02.3	130.0	02.3	131.0	02.3	132.0	02.3	133.0	02.3	134.0	02.3	135.0	02.4	136.0	02.4	89	
18	128.9	04.5	129.9	04.5	130.9	04.6	131.9	04.6	132.9	04.6	133.9	04.7	134.9	04.7	135.9	04.7	90	
19	128.8	06.8	129.8	06.8	130.8	06.9	131.8	06.9	132.8	07.0	133.8	07.0	134.8	07.1	135.8	07.1	91	
20	128.7	09.0	129.7	09.1	130.7	09.1	131.7	09.2	132.7	09.3	133.7	09.3	134.7	09.4	135.7	09.5	92	
21	128.5	11.2	129.5	11.3	130.5	11.4	131.5	11.5	132.5	11.6	133.5	11.7	134.5	11.8	135.5	11.9	93	
22	128.3	13.5	129.3	13.6	130.3	13.7	131.3	13.8	132.3	13.9	133.3	14.0	134.3	14.1	135.3	14.2	94	
23	128.0	15.7	129.0	15.8	130.0	16.0	131.0	16.1	132.0	16.2	133.0	16.3	134.0	16.5	135.0	16.6	95	
24	127.7	18.0	128.7	18.1	129.7	18.2	130.7	18.4	131.7	18.5	132.7	18.6	133.7	18.8	134.7	18.9	96	
25	127.4	20.2	128.4	20.3	129.4	20.5	130.4	20.6	131.4	20.8	132.4	21.0	133.3	21.1	134.3	21.3	97	
26	127.0	22.4	128.0	22.6	129.0	22.7	130.0	22.9	131.0	23.1	132.0	23.3	132.9	23.4	133.9	23.6	98	
27	126.6	24.6	127.6	24.8	128.6	25.0	129.6	25.2	130.6	25.4	131.5	25.6	132.5	25.8	133.5	26.0	99	
28	126.2	26.8	127.2	27.0	128.1	27.1	129.1	27.4	130.1	27.7	131.1	27.9	132.0	28.1	133.0	28.3	100	
29	125.7	29.0	126.7	29.2	127.6	29.5	128.6	29.7	129.6	29.9	130.6	30.1	131.5	30.4	132.5	30.6	101	
30	125.2	31.2	126.1	31.4	127.1	31.7	128.1	31.9	129.0	32.2	130.0	32.4	131.0	32.7	132.0	32.9	102	
31	124.6	33.4	125.6	33.6	126.5	33.9	127.5	34.2	128.5	34.4	129.4	34.7	130.4	34.9	131.4	35.2	103	
32	124.0	35.6	125.0	35.8	125.9	36.1	126.9	36.4	127.8	36.7	128.8	36.9	129.8	37.2	130.7	37.5	104	
33	123.4	37.7	124.3	38.0	125.3	38.3	126.2	38.6	127.2	38.9	128.1	39.2	129.1	39.5	130.1	39.8	105	
34	122.7	39.9	123.6	40.2	124.6	40.5	125.5	40.8	126.5	41.1	127.4	41.4	128.4	41.7	129.3	42.0	106	
35	122.0	42.0	122.9	42.3	123.9	42.6	124.8	43.0	125.8	43.3	126.7	43.6	127.6	44.0	128.6	44.3	107	
36	121.2	44.1	122.2	44.5	123.1	44.8	124.0	45.1	125.0	45.5	125.9	45.8	126.9	46.2	127.8	46.5	108	
37	120.4	46.2	121.4	46.6	122.3	46.9	123.2	47.3	124.2	47.7	125.1	48.0	126.0	48.4	127.0	48.7	109	
38	119.6	48.3	120.5	48.7	121.5	49.1	122.4	49.4	123.3	49.8	124.2	50.2	125.2	50.6	126.1	50.9	110	
39	118.7	50.4	119.7	50.8	120.6	51.2	121.5	51.6	122.4	52.0	123.3	52.4	124.3	52.7	125.2	53.1	111	
40	117.8	52.5	118.8	52.9	119.7	53.3	120.6	53.7	121.5	54.1	122.4	54.5	123.3	54.9	124.2	55.3	112	
41	116.9	54.5	117.8	54.9	118.7	55.4	119.6	55.8	120.5	56.2	121.4	56.6	122.4	57.1	123.3	57.5	113	
42	115.9	56.5	116.8	57.0	117.7	57.4	118.6	57.9	119.5	58.3	120.4	58.7	121.3	59.2	122.2	59.6	114	
43	114.9	58.6	115.8	59.0	116.7	59.5	117.6	59.9	118.5	60.4	119.4	60.8	120.3	61.3	121.2	61.7	115	
44	113.9	60.6	114.8	61.0	115.7	61.5	116.5	62.0	117.4	62.4	118.3	62.9	119.2	63.4	120.1	63.8	116	
45	112.8	62.5	113.7	63.0	114.6	63.5	115.4	64.0	116.3	64.5	117.2	65.0	118.1	65.4	118.9	65.9	117	
46	111.7	64.5	112.6	65.0	113.4	65.5	114.3	66.0	115.2	66.5	116.0	67.0	116.9	67.5	117.8	68.0	118	
47	110.6	66.4	111.4	67.0	112.3	67.5	113.1	68.0	114.0	68.5	114.9	69.0	115.7	69.5	116.6	70.0	119	
48	109.4	68.4	110.2	68.9	111.1	69.4	111.9	69.9	112.8	70.5	113.6	71.0	114.5	71.5	115.3	72.1	120	
49	108.2	70.3	109.0	70.8	109.9	71.3	110.7	71.9	111.5	72.4	112.4	73.0	113.2	73.5	114.1	74.1	121	
50	106.9	72.1	107.8	72.7	108.6	73.3	109.4	73.8	110.3	74.4	111.1	74.9	111.9	75.5	112.7	76.1	122	
51	105.7	74.0	106.5	74.6	107.3	75.1	108.1	75.7	108.9	76.3	109.8	76.9	110.6	77.4	111.4	78.0	123	
52	104.4	75.8	105.2	76.4	106.0	77.0	106.8	77.6	107.6	78.2	108.4	78.8	109.2	79.4	110.0	79.9	124	
53	103.0	77.6	103.8	78.2	104.6	78.8	105.4	79.4	106.2	80.0	107.0	80.6	107.8	81.2	108.6	81.8	125	
54	101.7	79.4	102.4	80.0	103.2	80.7	104.0	81.3	104.8	81.9	105.6	82.5	106.4	83.1	107.2	83.7	126	
55	100.3	81.2	101.0	81.8	101.8	82.4	102.6	83.1	103.4	83.7	104.1	84.3	104.9	85.0	105.7	86.6	127	
56	98.8	82.9	99.6	83.6	100.4	84.2	101.1	84.8	101.9	85.5	102.6	86.1	103.4	86.8	104.2	87.4	128	
57	97.4	84.6	98.1	85.3	98.9	85.9	99.6	86.6	100.4	87.3	101.1	87.9	101.9	88.6	102.6	89.2	129	
58	95.9	86.3	96.6	87.0	97.4	87.7	98.1	88.3	98.8	89.0	99.6	89.7	100.3	90.3	101.1	91.0	130	
59	94.3	88.0	95.1	88.7	95.8	89.3	96.5	90.0	97.3	90.7	98.0	91.4	98.7	92.1	99.5	92.8	131	
60	92.8	89.6	93.5	90.3	94.2	91.0	95.0	91.7	95.7	92.4	96.4	93.1	97.1	93.8	97.8	94.5	132	
61	91.2	91.2	91.9	91.9	92.6	92.6	93.3	93.3	94.0	94.0	94.8	94.8	95.5	95.5	96.2	96.2	133	
62	90.0	93.0	90.7	93.0	91.4	92.1	92.8	92.8	93.5	93.5	94.2	94.2	94.9	94.9	95.6	95.6	134	
63	88.8	94.8	89.5	94.8	90.2	91.0	91.8	91.8	92.5	92.5	93.2	93.2	93.9	93.9	94.6	94.6	135	
64	87.6	96.6	88.3	96.6	89.0	90.0	90.8	90.8	91.5	91.5	92.2	92.2	92.9	92.9	93.6	93.6	136	
65	86.4	98.4	87.1	98.4	88.6	89.8	90.6	90.6	91.3	91.3	92.0	92.0	92.7	92.7	93.4	93.4	137	
66	85.2	100.2	85.9	100.2	87.4	88.8	89.6	89.6	90.3	90.3	91.0	91.0	91.7	91.7	92.4	92.4	138	
67	84.0	102.0	84.7	102.0	86.2	87.8	88.6	88.6	89.3	89.3	90.0	90.0	90.7	90.7	91.4	91.4	139	
68	82.8	103.8	83.5	103.8	85.0	86.8	87.6	87.6	88.3	88.3	89.0	89.0	89.7	89.7	90.4	90.4	140	
69	81.6	105.6	82.3	105.6	83.8	85.8	86.6	86.6	87.3	87.3	88.0	88.0	88.7	88.7	89.4	89.4	141	
70	80.4	107.4	81.1	107.4	82.6	84.8	85.6											

(x.)

Traverse Table.

Distance. 137		138		139		140		141		142		143		144		
Crs.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Crs.	
1	136.8	06.7	137.8	06.8	138.8	06.8	139.8	06.9	140.8	06.9	141.8	07.0	142.8	07.0	143.8	07.1
2	136.3	13.4	137.3	13.5	138.3	13.6	139.3	13.7	140.3	13.8	141.3	13.9	142.3	14.0	143.3	14.1
3	135.5	20.1	136.5	20.2	137.5	20.4	138.5	20.5	139.5	20.7	140.5	20.8	141.4	21.0	142.4	21.1
4	134.4	26.7	135.3	26.9	136.3	27.1	137.3	27.3	138.3	27.5	139.3	27.7	140.2	27.9	141.2	28.1
5	132.9	33.3	133.9	33.5	134.8	33.8	135.8	34.0	136.8	34.3	137.7	34.5	138.7	34.7	139.7	35.0
6	131.1	39.8	132.1	40.1	133.0	40.3	134.0	40.6	134.9	40.9	135.9	41.2	136.8	41.5	137.8	41.8
7	129.0	46.1	129.9	46.5	130.9	46.8	131.8	47.2	132.8	47.5	133.7	47.8	134.6	48.2	135.6	48.5
8	126.6	52.4	127.5	52.8	128.4	53.2	129.3	53.6	130.3	54.0	131.2	54.3	132.1	54.7	133.0	55.1
9	123.8	58.6	124.7	59.0	125.7	59.4	126.6	59.9	127.5	60.3	128.4	60.7	129.3	61.2	130.2	61.6
10	120.8	64.6	121.7	65.0	122.6	65.5	123.5	66.0	124.4	66.5	125.2	66.9	126.1	67.4	127.0	67.9
11	117.5	70.4	118.4	70.9	119.2	71.5	120.1	72.0	120.9	72.5	121.8	73.0	122.7	73.5	123.5	74.0
12	113.9	76.1	114.7	76.7	115.6	77.2	116.4	77.8	117.2	78.3	118.1	78.9	118.9	79.4	119.7	80.0
13	110.0	81.6	110.8	82.2	111.6	82.8	112.4	83.4	113.2	84.0	114.0	84.6	114.9	85.2	115.7	85.8
14	105.9	86.9	106.7	87.4	107.4	88.2	108.2	88.8	109.0	89.4	109.8	90.1	110.5	90.7	111.3	91.3
15	101.5	92.0	102.2	92.7	103.0	93.3	103.7	94.0	104.5	94.7	105.2	95.4	106.0	96.0	106.7	96.7
16	96.9	96.9	97.6	97.6	98.3	98.3	99.0	99.0	99.7	99.7	100.4	100.4	101.1	101.1	101.8	101.8
17	137.0	02.4	138.0	02.4	139.0	02.4	140.0	02.4	141.0	02.5	142.0	02.5	143.0	02.5	144.0	02.5
18	136.9	04.8	137.9	04.8	138.9	04.9	139.9	04.9	140.9	04.9	141.9	05.0	142.9	05.0	143.9	05.0
19	136.8	07.2	137.8	07.2	138.8	07.3	139.8	07.3	140.8	07.4	141.8	07.4	142.8	07.5	143.8	07.5
20	136.7	09.6	137.7	09.6	138.7	09.7	139.7	09.8	140.7	09.8	141.7	09.9	142.7	10.0	143.6	10.0
21	136.5	11.9	137.5	12.0	138.5	12.1	139.5	12.2	140.5	12.3	141.5	12.4	142.5	12.5	143.5	12.6
22	136.2	14.3	137.2	14.4	138.2	14.5	139.2	14.6	140.2	14.7	141.2	14.8	142.2	14.9	143.2	15.1
23	136.0	16.7	137.0	16.8	138.0	16.9	139.0	17.1	139.9	17.2	140.9	17.3	141.9	17.4	142.9	17.5
24	135.7	19.1	136.7	19.2	137.7	19.3	138.6	19.5	139.6	19.6	140.6	19.8	141.6	19.9	142.6	20.0
25	135.3	21.4	136.3	21.6	137.3	21.7	138.3	21.9	139.3	22.1	140.3	22.2	141.2	22.4	142.2	22.5
26	134.9	23.8	135.9	24.0	136.9	24.1	137.9	24.3	138.9	24.5	139.8	24.7	140.8	24.8	141.8	25.0
27	134.5	26.1	135.5	26.3	136.4	26.5	137.4	26.7	138.4	26.9	139.4	27.1	140.4	27.3	141.4	27.5
28	134.0	28.5	135.0	28.7	136.0	28.9	136.9	29.1	137.9	29.3	138.9	29.5	139.9	29.7	140.9	29.9
29	133.5	30.8	134.5	31.0	135.4	31.3	136.4	31.5	137.4	31.7	138.4	31.9	139.3	32.2	140.3	32.4
30	132.9	33.1	133.9	33.4	134.9	33.6	135.8	33.9	136.8	34.1	137.8	34.4	138.8	34.6	139.7	34.8
31	132.3	35.5	133.3	35.7	134.3	36.0	135.2	36.2	136.2	36.5	137.2	36.8	138.1	37.0	139.1	37.3
32	131.7	37.8	132.7	38.0	133.6	38.3	134.6	38.6	135.5	38.9	136.5	39.1	137.5	39.4	138.4	39.7
33	131.0	40.1	132.0	40.3	132.9	40.6	133.9	40.9	134.8	41.2	135.8	41.5	136.8	41.8	137.7	42.1
34	130.3	42.3	131.2	42.6	132.2	43.0	133.1	43.3	134.1	43.6	135.1	43.9	136.0	44.2	137.0	44.5
35	129.5	44.6	130.5	44.9	131.4	45.3	132.4	45.6	133.3	45.9	134.3	46.2	135.2	46.6	136.2	46.9
36	128.7	46.9	129.7	47.2	130.6	47.5	131.6	47.9	132.5	48.2	133.4	48.6	134.4	48.9	135.3	49.3
37	127.9	49.1	128.8	49.5	129.8	49.8	130.7	50.2	131.6	50.5	132.6	50.9	133.5	51.2	134.4	51.6
38	127.0	51.3	128.0	51.7	128.9	52.1	129.8	52.4	130.7	52.8	131.7	53.2	132.6	53.6	133.5	53.9
39	126.1	53.5	127.0	53.9	128.0	54.3	128.9	54.7	129.8	55.1	130.7	55.5	131.6	55.9	132.6	56.3
40	125.2	55.7	126.1	56.1	127.0	56.5	127.9	56.9	128.8	57.3	129.7	57.8	130.6	58.2	131.6	58.6
41	124.2	57.9	125.1	58.3	126.0	58.7	126.9	59.2	127.8	59.6	128.7	60.0	129.6	60.4	130.5	60.9
42	123.1	60.1	124.0	60.5	124.9	60.9	125.8	61.4	126.7	61.8	127.6	62.2	128.5	62.7	129.4	63.1
43	122.1	62.2	123.0	62.7	123.8	63.1	124.7	63.6	125.6	64.0	126.5	64.5	127.4	64.9	128.3	65.4
44	121.0	64.3	121.8	64.8	122.7	65.3	123.6	65.7	124.5	66.2	125.4	66.7	126.3	67.1	127.1	67.6
45	119.8	66.4	120.7	66.9	121.6	67.4	122.4	67.9	123.3	68.4	124.2	68.8	125.1	69.3	125.9	69.8
46	118.6	68.5	119.5	69.0	120.4	69.5	121.2	70.0	122.1	70.5	123.0	71.0	123.8	71.5	124.7	72.0
47	117.4	70.6	118.3	71.1	119.1	71.6	120.0	72.1	120.9	72.6	121.7	73.1	122.6	73.7	123.4	74.2
48	116.2	72.6	117.0	73.1	117.9	73.7	118.7	74.2	119.6	74.7	120.4	75.2	121.3	75.8	122.1	76.3
49	114.9	74.6	115.7	75.2	116.6	75.7	117.4	76.2	118.3	76.8	119.1	77.3	119.9	77.9	120.8	78.4
50	113.6	76.6	114.4	77.2	115.2	77.7	116.1	78.3	116.9	78.8	117.7	79.4	118.6	80.0	119.4	80.5
51	112.2	78.6	113.0	79.2	113.9	79.7	114.7	80.3	115.5	80.9	116.3	81.4	117.1	82.0	118.0	82.6
52	110.8	80.5	111.6	81.1	112.5	81.7	113.3	82.3	114.1	82.9	114.9	83.5	115.7	84.1	116.5	84.6
53	109.4	82.4	110.2	83.1	111.0	83.7	111.8	84.3	112.6	84.9	113.4	85.5	114.2	86.1	115.0	86.7
54	108.0	84.3	108.7	85.0	109.5	85.6	110.3	86.2	111.1	86.8	111.9	87.4	112.7	88.0	113.5	88.7
55	106.5	86.2	107.2	86.8	108.0	87.5	108.8	88.1	109.6	88.7	110.4	89.4	111.1	90.0	111.9	90.6
56	104.9	88.1	105.7	88.7	106.5	89.3	107.2	90.0	108.0	90.6	108.8	91.3	109.5	91.9	110.3	92.6
57	103.4	89.9	104.1	90.5	104.9	91.2	105.7	91.8	106.4	92.5	107.2	93.2	107.9	93.8	108.7	94.5
58	101.8	91.7	102.6	92.3	103.3	93.0	104.0	93.7	104.8	94.3	105.5	95.0	106.3	95.7	107.0	96.4
59	100.2	93.4	100.9	94.1	101.7	94.8	102.4	95.5	103.1	96.2	103.9	96.8	104.6	97.5	105.3	98.2
60	98.5	95.2	99.3	95.9	100.0	96.6	100.7	97.3	101.4	97.9	102.1	98.6	102.9	99.3	103.6	100.0
61	96.9	96.9	97.6	97.6	98.3	98.3	99.0	99.0	99.7	99.7	100.4	100.4	101.1	101.1	101.8	101.8

(x.)

Traverse Table.

Distance. 145			146			147			148			149			150			151			152			Crs.
Crs.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Crs.			
1	144.8	07.1	145.8	07.2	146.8	07.2	147.8	07.3	148.8	07.3	149.8	07.4	150.8	07.4	151.8	07.5	73					73		
	144.3	14.2	145.3	14.3	146.3	14.4	147.3	14.5	148.3	14.6	149.3	14.7	150.3	14.8	151.3	14.9	74					74		
	143.4	21.3	144.4	21.4	145.4	21.6	146.4	21.7	147.4	21.9	148.4	22.0	149.4	22.2	150.3	22.3	75					75		
	142.2	28.3	143.2	28.5	144.2	28.7	145.2	28.9	146.1	29.1	147.1	29.3	148.1	29.5	149.1	29.7	76					76		
2	140.7	35.2	141.6	35.5	142.6	35.7	143.6	36.0	144.5	36.2	145.5	36.5	146.5	36.7	147.4	36.9	77					77		
	138.8	42.1	139.7	42.4	140.7	42.7	141.6	43.0	142.6	43.2	143.5	43.5	144.5	43.8	145.5	44.1	78					78		
	136.5	48.8	137.5	49.2	138.4	49.5	139.3	49.9	140.3	50.2	141.2	50.5	142.2	50.9	143.1	51.2	79					79		
	134.0	55.5	134.9	55.9	135.8	56.3	136.7	56.6	137.7	57.0	138.6	57.4	139.5	57.8	140.4	58.2	80					80		
3	131.1	62.0	132.0	62.4	132.9	62.9	133.8	63.3	134.7	63.7	135.6	64.1	136.5	64.6	137.4	65.0	81					81		
	127.9	68.3	128.8	68.8	129.6	69.3	130.5	69.8	131.4	70.2	132.3	70.7	133.2	71.2	134.1	71.6	82					82		
	124.4	74.5	125.2	75.1	126.1	75.6	126.9	76.1	127.8	76.6	128.7	77.1	129.5	77.6	130.4	78.1	83					83		
	120.6	80.6	121.4	81.1	122.2	81.7	123.1	82.2	123.9	82.8	124.7	83.3	125.5	83.9	126.4	84.4	84					84		
4	116.5	86.4	117.3	87.0	118.1	87.6	118.9	88.2	119.7	88.8	120.5	89.4	121.3	90.0	122.1	90.5	85					85		
	112.1	92.0	112.9	92.6	113.6	93.3	114.4	93.9	115.2	94.5	115.9	95.2	116.7	95.8	117.5	96.4	86					86		
	107.4	97.4	108.2	98.0	108.9	98.7	109.7	99.4	110.4	100.1	111.1	100.7	111.9	101.4	112.6	102.1	87					87		
	102.5	102.5	103.2	103.2	103.9	103.9	104.7	104.7	105.4	105.4	106.1	106.1	106.8	106.8	107.5	107.5	88					88		
1	145.0	02.5	146.0	02.5	147.0	02.6	148.0	02.6	149.0	02.6	150.0	02.6	151.0	02.6	152.0	02.7	89					89		
	144.9	05.1	145.9	05.1	146.9	05.1	147.9	05.2	148.9	05.2	149.9	05.2	150.9	05.3	151.9	05.3	90					90		
	144.8	07.6	145.8	07.6	146.8	07.7	147.8	07.7	148.8	07.8	149.8	07.9	150.8	07.9	151.8	08.0	91					91		
	144.6	10.1	145.6	10.2	146.6	10.3	147.6	10.3	148.6	10.4	149.6	10.5	150.6	10.5	151.6	10.6	92					92		
5	144.4	12.6	145.4	12.7	146.4	12.8	147.4	12.9	148.4	13.0	149.4	13.1	150.4	13.2	151.4	13.2	85					85		
	144.2	15.2	145.2	15.3	146.2	15.4	147.2	15.5	148.2	15.6	149.2	15.7	150.2	15.8	151.2	15.9	84					84		
	143.9	17.7	144.9	17.8	145.9	17.9	146.9	18.0	147.9	18.2	148.9	18.3	149.9	18.4	150.9	18.5	83					83		
	143.6	20.2	144.6	20.3	145.6	20.5	146.6	20.6	147.5	20.7	148.5	20.9	149.5	21.0	150.5	21.2	82					82		
9	143.2	22.7	144.2	22.8	145.2	23.0	146.2	23.2	147.2	23.3	148.2	23.5	149.1	23.6	150.1	23.8	81					81		
	142.8	25.2	143.8	25.4	144.8	25.5	145.8	25.7	146.7	25.9	147.7	26.0	148.7	26.2	149.7	26.4	80					80		
	142.3	27.7	143.3	27.9	144.3	28.0	145.3	28.2	146.3	28.4	147.2	28.6	148.2	28.8	149.2	29.0	79					79		
	141.8	30.1	142.8	30.4	143.8	30.6	144.8	30.8	145.7	31.0	146.7	31.2	147.7	31.4	148.7	31.6	78					78		
13	141.3	32.6	142.3	32.8	143.2	33.1	144.2	33.3	145.2	33.5	146.2	33.7	147.1	34.0	148.1	34.2	77					77		
	140.7	35.1	141.7	35.3	142.6	35.6	143.6	35.8	144.6	36.0	145.5	36.3	146.5	36.5	147.5	36.8	76					76		
	140.1	37.5	141.0	37.8	142.0	38.0	143.0	38.3	143.9	38.6	144.9	38.8	145.9	39.1	146.8	39.3	75					75		
	139.4	40.0	140.3	40.2	141.3	40.5	142.3	40.8	143.2	41.1	144.2	41.3	145.2	41.6	146.1	41.9	74					74		
17	138.7	42.4	139.6	42.7	140.6	43.0	141.5	43.3	142.5	43.6	143.4	43.9	144.4	44.1	145.4	44.4	73					73		
	137.9	44.8	138.9	45.1	139.8	45.4	140.8	45.7	141.7	46.0	142.7	46.4	143.6	46.7	144.6	47.0	72					72		
	137.1	47.2	138.0	47.5	139.0	47.9	139.9	48.2	140.9	48.5	141.8	48.8	142.8	49.2	143.7	49.5	71					71		
	136.3	49.6	137.2	49.9	138.1	50.3	139.1	50.6	140.0	51.0	141.0	51.3	141.9	51.6	142.8	52.0	70					70		
21	135.4	52.0	136.3	52.3	137.2	52.7	138.2	53.0	139.1	53.4	140.0	53.8	141.0	54.1	141.9	54.5	69					69		
	134.4	54.3	135.4	54.7	136.3	55.1	137.2	55.4	138.2	55.8	139.1	56.2	140.0	56.6	140.9	56.9	68					68		
	133.5	56.7	134.4	57.0	135.3	57.4	136.2	57.8	137.2	58.2	138.1	58.6	139.0	59.0	139.9	59.4	67					67		
	132.5	59.0	133.4	59.4	134.3	59.8	135.2	60.2	136.1	60.6	137.0	61.0	137.9	61.4	138.9	61.8	66					66		
25	131.4	61.3	132.3	61.7	133.2	62.1	134.1	62.5	135.0	63.0	135.9	63.4	136.9	63.8	137.8	64.2	65					65		
	130.3	63.6	131.2	64.0	132.1	64.4	133.0	64.9	133.9	65.3	134.8	65.8	135.7	66.2	136.6	66.6	64					64		
	129.2	65.8	130.1	66.3	131.0	66.7	131.9	67.2	132.8	67.6	133.7	68.1	134.5	68.6	135.4	69.0	63					63		
	128.0	68.1	128.9	68.5	129.8	69.0	130.7	69.5	131.6	70.0	132.4	70.4	133.3	70.9	134.2	71.4	62					62		
29	126.8	70.3	127.7	70.8	128.6	71.3	129.4	71.8	130.3	72.2	131.2	72.7	132.1	73.2	132.9	73.7	61					61		
	125.6	72.5	126.4	73.0	127.3	73.5	128.2	74.0	129.0	74.5	129.9	75.0	130.8	75.5	131.6	76.0	60					60		
	124.3	74.7	125.1	75.2	126.0	75.7	126.9	76.2	127.7	76.7	128.6	77.3	129.4	77.8	130.3	78.3	59					59		
	123.0	76.8	123.8	77.4	124.7	77.9	125.5	78.4	126.4	79.0	127.2	79.5	128.1	80.0	128.9	80.5	58					58		
33	121.6	79.0	122.4	79.5	123.3	80.1	124.1	80.6	125.0	81.2	125.8	81.7	126.6	82.2	127.5	82.8	57					57		
	120.2	81.1	121.0	81.6	121.9	82.2	122.7	82.8	123.5	83.3	124.4	83.9	125.2	84.4	126.0	85.0	56					56		
	118.8	83.2	119.6	83.7	120.4	84.3	121.2	84.9	122.1	85.5	122.9	86.0	123.7	86.6	124.5	87.2	55					55		
	117.3	85.2	118.1	85.8	118.9	86.4	119.7	87.0	120.5	87.6	121.4	88.2	122.2	88.8	123.0	89.3	54					54		
37	115.8	87.3	116.6	87.9	117.4	88.5	118.2	89.1	119.0	89.7	119.8	90.3	120.6	90.9	121.4	91.5	53					53		
	114.3	89.3	115.0	89.9	115.8	90.5	116.6	91.1	117.4	91.7	118.2	92.3	119.0	93.0	119.8	93.6	52					52		
	112.7	91.3	113.5	91.9	114.2	92.5	115.0	93.1	115.8	93.8	116.6	94.4	117.3	95.0	118.1	95.7	51					51		
	111.1	93.2	111.8	93.8	112.6	94.5	113.4	95.1	114.1	95.8	114.9	96.4	115.7	97.1	116.4	97.7	50					50		
41	109.4	95.1	110.2	95.8	110.9	96.4	111.7	97.1	112.5	97.8	113.2	98.4	114.0	99.1	114.7	99.7	49					49		
	107.8	97.0	108.5	97.7	109.2	98.4	110.0	99.9	110.7	99.7	111.5	100.4	112.2	101.0	113.0	101.7	48					48		
	106.0	98.9	106.8	99.6	107.5	100.3	108.2	100.9	109.0	101.6	109.7	102.3	110.4	103.0	111.2	103.7	47					47		
	104.3	100.7	105.0	101.4	105.7	102.1	106.5	102.8	107.2	103.5	107.9	104.2	108.6	104.9	109.3	105.6	46					46		
45	102.5	102.5	103.2	103.2	103.9	103.9	104.7	104.7	105.4	105.4	106.1	106.1	106.8	106.8	107.5	107.5	45					45		
Crs.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Crs.							

Traverse Table.

(x.)

Distance. 153		154		155		156		157		158		159		160	
Crs.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Crs.
1	152.8 07.5	153.8 07.6	154.8 07.6	155.8 07.7	156.8 07.7	157.8 07.8	158.8 07.8	159.8 07.9	160.8 07.9	161.8 08.0	162.8 08.0	163.8 08.1	164.8 08.1	165.8 08.2	2
2	152.3 15.0	153.3 15.1	154.3 15.2	155.3 15.3	156.3 15.4	157.3 15.5	158.3 15.6	159.3 15.7	160.3 15.7	161.3 15.8	162.3 15.9	163.3 16.0	164.3 16.0	165.3 16.1	3
3	151.3 22.4	152.3 22.6	153.3 22.7	154.3 22.9	155.3 23.0	156.3 23.2	157.3 23.3	158.3 23.5	159.3 23.6	160.3 23.8	161.3 23.9	162.3 24.1	163.3 24.2	164.3 24.4	4
4	150.1 29.9	151.0 30.0	152.0 30.2	153.0 30.4	154.0 30.6	155.0 30.8	156.0 31.0	157.0 31.2	158.0 31.4	159.0 31.6	160.0 31.8	161.0 32.0	162.0 32.2	163.0 32.4	5
5	148.4 37.2	149.4 37.4	150.4 37.7	151.3 37.9	152.3 38.2	153.3 38.4	154.2 38.6	155.2 38.9	156.2 39.1	157.2 39.4	158.2 39.6	159.2 39.9	160.2 40.1	161.2 40.4	6
6	146.4 44.4	147.4 44.7	148.3 45.0	149.3 45.3	150.2 45.6	151.2 45.9	152.2 46.1	153.1 46.4	154.1 46.7	155.1 47.0	156.1 47.3	157.1 47.6	158.1 47.9	159.1 48.2	7
7	144.1 51.5	145.0 51.9	145.9 52.2	146.9 52.5	147.8 52.9	148.8 53.2	149.7 53.6	150.6 53.9	151.6 54.2	152.6 54.5	153.6 54.8	154.6 55.1	155.6 55.4	156.6 55.7	8
8	141.4 58.6	142.3 58.9	143.2 59.3	144.1 59.7	145.1 60.1	146.0 60.5	146.9 60.9	147.8 61.2	148.8 61.6	149.7 62.0	150.7 62.4	151.6 62.8	152.6 63.1	153.6 63.5	9
9	138.3 65.4	139.2 65.9	140.1 66.3	141.0 66.7	141.9 67.1	142.8 67.6	143.7 68.0	144.6 68.4	145.6 68.8	146.5 69.2	147.4 69.6	148.4 70.0	149.3 70.4	150.3 70.8	10
10	134.9 72.1	135.8 72.6	136.7 73.1	137.6 73.5	138.5 74.0	139.4 74.5	140.2 74.9	141.1 75.4	142.1 75.8	143.0 76.3	143.9 76.7	144.8 77.1	145.7 77.6	146.7 78.0	11
11	131.2 78.7	132.1 79.2	132.9 79.7	133.8 80.2	134.7 80.7	135.5 81.2	136.4 81.7	137.2 82.3	138.1 82.8	139.0 83.3	139.9 83.8	140.8 84.3	141.7 84.8	142.6 85.3	12
12	127.2 85.0	128.0 85.6	128.9 86.1	129.7 86.7	130.5 87.2	131.4 87.8	132.2 88.3	133.0 88.9	133.9 89.4	134.8 89.9	135.7 90.4	136.6 90.9	137.5 91.4	138.4 91.9	13
13	122.9 91.1	123.7 91.7	124.5 92.3	125.3 92.9	126.1 93.5	126.9 94.1	127.7 94.7	128.5 95.3	129.4 95.9	130.2 96.5	131.1 97.0	132.0 97.6	132.9 98.1	133.8 98.7	14
14	118.3 97.1	119.0 97.7	119.8 98.3	120.6 99.0	121.4 99.6	122.1 100.2	122.9 100.9	123.7 101.5	124.5 102.1	125.4 102.8	126.2 103.4	127.1 104.1	128.0 104.7	128.9 105.4	15
15	113.4 102.7	114.1 103.4	114.8 104.1	115.6 104.8	116.3 105.4	117.1 106.1	117.8 106.8	118.5 107.4	119.3 108.1	120.1 108.8	120.9 109.5	121.7 110.2	122.5 110.9	123.3 111.6	16
16	108.2 108.2	108.9 108.9	109.6 109.6	110.3 110.3	111.0 111.0	111.7 111.7	112.4 112.4	113.1 113.1	113.8 113.8	114.5 114.5	115.2 115.2	115.9 115.9	116.6 116.6	117.3 117.3	17
17	153.0 02.7	154.0 02.7	155.0 02.7	156.0 02.7	157.0 02.7	158.0 02.8	159.0 02.8	160.0 02.8	161.0 02.8	162.0 02.9	163.0 02.9	164.0 03.0	165.0 03.0	166.0 03.1	18
18	152.9 03.3	153.9 03.4	154.9 03.4	155.9 03.4	156.9 03.5	157.9 03.5	158.9 03.5	159.9 03.5	160.9 03.5	161.9 03.6	162.9 03.6	163.9 03.7	164.9 03.7	165.9 03.8	19
19	152.8 08.0	153.8 08.1	154.8 08.1	155.8 08.2	156.8 08.2	157.8 08.3	158.8 08.3	159.8 08.4	160.8 08.4	161.8 08.5	162.8 08.5	163.8 08.6	164.8 08.6	165.8 08.7	20
20	152.6 10.7	153.6 10.7	154.6 10.8	155.6 10.9	156.6 11.0	157.6 11.0	158.6 11.1	159.6 11.2	160.6 11.2	161.6 11.3	162.6 11.3	163.6 11.4	164.6 11.4	165.6 11.5	21
21	152.4 13.3	153.4 13.4	154.4 13.5	155.4 13.6	156.4 13.7	157.4 13.8	158.4 13.9	159.4 13.9	160.4 14.0	161.4 14.0	162.4 14.1	163.4 14.2	164.4 14.2	165.4 14.3	22
22	152.2 16.0	153.2 16.1	154.2 16.2	155.2 16.3	156.2 16.4	157.2 16.5	158.2 16.6	159.2 16.7	160.2 16.7	161.2 16.8	162.2 16.9	163.2 16.9	164.2 17.0	165.2 17.1	23
23	151.9 18.6	152.9 18.8	153.8 18.9	154.8 19.0	155.8 19.1	156.8 19.2	157.8 19.3	158.8 19.4	159.8 19.5	160.8 19.6	161.8 19.7	162.8 19.8	163.8 19.8	164.8 19.9	24
24	151.5 21.3	152.5 21.4	153.5 21.6	154.5 21.7	155.5 21.9	156.5 22.0	157.5 22.1	158.5 22.2	159.5 22.3	160.5 22.4	161.5 22.5	162.5 22.6	163.5 22.7	164.5 22.8	25
25	151.1 23.9	152.1 24.1	153.1 24.2	154.1 24.4	155.1 24.6	156.1 24.7	157.1 24.9	158.1 25.0	159.1 25.1	160.1 25.2	161.1 25.3	162.1 25.4	163.1 25.5	164.1 25.6	26
26	150.7 26.6	151.7 26.7	152.6 26.9	153.6 27.1	154.6 27.3	155.6 27.4	156.6 27.6	157.6 27.8	158.6 27.9	159.6 28.0	160.6 28.1	161.6 28.2	162.6 28.3	163.6 28.4	27
27	150.2 29.2	151.2 29.4	152.2 29.6	153.2 29.8	154.2 30.0	155.2 30.1	156.2 30.3	157.2 30.5	158.2 30.6	159.2 30.7	160.2 30.8	161.2 30.9	162.2 31.0	163.2 31.1	28
28	149.7 31.8	150.6 32.0	151.6 32.2	152.6 32.4	153.6 32.6	154.5 32.9	155.5 33.1	156.5 33.3	157.5 33.4	158.5 33.6	159.5 33.7	160.5 33.8	161.5 33.9	162.5 34.0	29
29	149.1 34.4	150.1 34.6	151.0 34.9	152.0 35.1	153.0 35.3	154.0 35.5	154.9 35.8	155.9 36.0	156.9 36.1	157.9 36.3	158.9 36.4	159.9 36.5	160.9 36.6	161.9 36.7	30
30	148.5 37.0	149.4 37.3	150.4 37.5	151.4 37.7	152.3 38.0	153.3 38.2	154.3 38.5	155.2 38.7	156.2 38.9	157.2 39.1	158.2 39.3	159.2 39.4	160.2 39.5	161.2 39.6	31
31	147.8 39.6	148.8 39.9	149.7 40.1	150.7 40.4	151.7 40.6	152.6 40.9	153.6 41.2	154.5 41.4	155.5 41.6	156.5 41.8	157.5 42.0	158.5 42.1	159.5 42.2	160.5 42.3	32
32	147.1 42.2	148.0 42.4	149.0 42.7	150.0 43.0	150.9 43.3	151.9 43.6	152.8 43.8	153.8 44.1	154.8 44.3	155.8 44.5	156.8 44.7	157.8 44.9	158.8 45.1	159.8 45.3	33
33	146.3 44.7	147.3 45.0	148.2 45.3	149.2 45.6	150.1 45.9	151.1 46.2	152.1 46.5	153.0 46.8	154.0 47.0	155.0 47.3	156.0 47.6	157.0 47.8	158.0 48.1	159.0 48.3	34
34	145.5 47.3	146.5 47.6	147.4 47.9	148.4 48.2	149.3 48.5	150.3 48.8	151.2 49.1	152.2 49.4	153.2 49.7	154.2 50.0	155.2 50.3	156.2 50.6	157.2 50.9	158.2 51.2	35
35	144.7 49.8	145.6 50.1	146.6 50.5	147.5 50.8	148.4 51.1	149.4 51.4	150.3 51.8	151.3 52.1	152.3 52.4	153.3 52.7	154.3 53.0	155.3 53.3	156.3 53.6	157.3 53.9	36
36	143.8 52.3	144.7 52.7	145.7 53.0	146.6 53.4	147.5 53.7	148.5 54.0	149.4 54.4	150.4 54.7	151.4 55.0	152.4 55.3	153.4 55.6	154.4 55.9	155.4 56.2	156.4 56.5	37
37	142.8 54.8	143.8 55.2	144.7 55.5	145.6 55.9	146.6 56.3	147.5 56.6	148.4 57.0	149.4 57.3	150.4 57.6	151.4 57.9	152.4 58.2	153.4 58.5	154.4 58.8	155.4 59.1	38
38	141.9 57.3	142.8 57.7	143.7 58.1	144.6 58.4	145.6 58.8	146.5 59.2	147.4 59.6	148.3 59.9	149.3 60.2	150.3 60.5	151.3 60.8	152.3 61.1	153.3 61.4	154.3 61.7	39
39	140.8 59.8	141.8 60.2	142.7 60.6	143.6 61.0	144.5 61.3	145.4 61.7	146.4 62.1	147.3 62.4	148.3 62.8	149.2 63.1	150.2 63.4	151.2 63.7	152.2 64.0	153.2 64.3	40
40	139.8 62.2	140.7 62.6	141.6 63.0	142.5 63.5	143.4 63.9	144.3 64.3	145.3 64.7	146.2 65.1	147.2 65.5	148.1 65.9	149.1 66.2	150.1 66.6	151.1 66.9	152.1 67.3	41
41	138.7 64.7	139.6 65.1	140.5 65.5	141.4 65.9	142.3 66.4	143.2 66.8	144.1 67.2	145.0 67.6	145.9 68.0	146.8 68.4	147.7 68.8	148.7 69.1	149.6 69.5	150.6 69.9	42
42	137.5 67.1	138.4 67.5	139.3 67.9	140.2 68.4	141.1 68.8	142.0 69.3	142.9 69.7	143.8 70.1	144.7 70.5	145.6 70.9	146.5 71.3	147.4 71.7	148.3 72.1	149.2 72.5	43
43	136.3 69.5	137.2 69.9	138.1 70.4	139.0 70.8	139.9 71.3	140.8 71.7	141.7 72.1	142.6 72.5	143.5 72.9	144.4 73.3	145.3 73.7	146.2 74.1	147.1 74.5	148.0 74.9	44
44	135.1 71.8	136.0 72.3	136.9 72.8	137.7 73.2	138.6 73.7	139.5 74.2	140.4 74.6	141.3 75.0	142.2 75.4	143.1 75.8	144.0 76.2	144.9 76.6	145.8 77.0	146.7 77.4	45
45	133.8 74.2	134.7 74.7	135.6 75.1	136.4 75.6	137.3 76.1	138.2 76.6	139.1 77.1	139.9 77.6	140.8 78.0	141.7 78.5	142.6 78.9	143.5 79.3	144.4 79.7	145.3 80.1	46
46	132.5 76.5	133.4 77.0	134.2 77.5	135.1 77.9	136.0 78.5	136.8 79.0	137.7 79.5	138.6 80.0	139.5 80.5	140.4 81.0	141.3 81.4	142.2 81.9	143.1 82.3	144.0 82.8	47
47	131.1 78.8	132.0 79.3	132.9 79.8	133.7 80.3	134.6 80.9	135.4 81.4	136.3 81.9	137.1 82.4	138.0 82.9	138.9 83.4	139.8 83.9	140.7 84.3	141.6 84.8	142.5 85.3	48
48	129.8 81.1	130.6 81.6	131.4 82.1	132.3 82.7	133.1 83.2	134.0 83.7	134.8 84.3	135.7 84.8	136.6 85.3	137.5 85.8	138.4 86.3	139.3 86.8	140.2 87.3	141.1 87.8	49
49	128.3 83.3	129.2 83.9	130.0 84.4	130.8 85.0	131.7 85.5	132.5 86.1	133.3 86.6	134.2 87.1	135.1 87.6	136.0 88.1	136.9 88.6	137.8 89.1	138.7 89.6	139.6 90.1	50
50	126.8 85.6	127.7 86.1	128.5 86.7	129.3 87.2	130.2 87.8	131.0 88.4	131.8 88.9	132.6 89.5	133.5 90.0	134.4 90.5	135.3 91.0	136.2 91.5	137.1 92.0	138.0 92.5	51
51	125.3 87.8	126.1 88.3	127.0 88.9	127.8 89.5	128.6 90.1	129.4 90.6	130.2 91.2	131.1 91.8	132.0 92.3	132.9 92.9	133.8 93.4	134.7 93.9	135.6 94.4	136.5 94.9	52
52	123.8 89.9	124.6 90.5	125.4 91.1	126.2 91.7	127.0 92.3	127.8 92.9	128.6 93.5								

Traverse Table.

(x.)

Distance. 161		162		163		164		165		166		167		168	
Crs.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Crs.
1	160.8 07.9	161.8 08.0	162.8 08.0	163.8 08.1	164.8 08.1	165.8 08.2	166.8 08.2	167.8 08.2	168.8 08.2	169.8 08.2	170.8 08.2	171.8 08.2	172.8 08.2	173.8 08.2	1
2	160.2 15.8	161.2 15.9	162.2 16.0	163.2 16.1	164.2 16.2	165.2 16.3	166.2 16.4	167.2 16.5	168.2 16.6	169.2 16.7	170.2 16.8	171.2 16.9	172.2 17.0	173.2 17.1	2
3	159.3 23.6	160.2 23.8	161.2 23.9	162.2 24.1	163.2 24.2	164.2 24.4	165.2 24.5	166.2 24.6	167.2 24.7	168.2 24.8	169.2 24.9	170.2 25.0	171.2 25.1	172.2 25.2	3
4	157.9 31.4	158.9 31.6	159.9 31.8	160.8 32.0	161.8 32.2	162.8 32.4	163.8 32.6	164.8 32.8	165.8 33.0	166.8 33.2	167.8 33.4	168.8 33.6	169.8 33.8	170.8 34.0	4
5	156.2 39.1	157.1 39.4	158.1 39.6	159.1 39.9	160.1 40.1	161.0 40.3	162.0 40.6	163.0 40.8	164.0 41.0	165.0 41.3	166.0 41.5	167.0 41.8	168.0 42.0	169.0 42.3	5
6	154.1 46.7	155.0 47.0	156.0 47.3	156.9 47.6	157.9 47.9	158.9 48.2	159.8 48.5	160.8 48.8	161.8 49.1	162.8 49.4	163.8 49.7	164.8 50.0	165.8 50.3	166.8 50.6	6
7	151.6 54.2	152.5 54.6	153.5 54.9	154.4 55.2	155.3 55.6	156.3 55.9	157.2 56.3	158.2 56.6	159.2 57.0	160.2 57.3	161.2 57.6	162.2 58.0	163.2 58.3	164.2 58.6	7
8	148.7 61.6	149.7 62.0	150.6 62.4	151.5 62.8	152.4 63.1	153.4 63.5	154.3 63.9	155.2 64.3	156.2 64.6	157.2 65.0	158.2 65.3	159.2 65.7	160.2 66.0	161.2 66.4	8
9	145.5 68.8	146.4 69.3	147.3 69.7	148.3 70.1	149.2 70.6	150.1 71.0	151.0 71.4	151.9 71.8	152.9 72.2	153.8 72.6	154.8 73.0	155.8 73.4	156.8 73.8	157.8 74.2	9
10	142.0 75.9	142.9 76.4	143.8 76.8	144.6 77.3	145.5 77.8	146.4 78.2	147.3 78.7	148.2 79.2	149.1 79.6	150.0 80.1	150.9 80.5	151.8 81.0	152.8 81.4	153.7 81.8	10
11	138.1 82.8	138.9 83.3	139.8 83.8	140.7 84.3	141.5 84.8	142.4 85.3	143.2 85.8	144.1 86.4	145.0 86.8	145.9 87.3	146.8 87.8	147.7 88.2	148.6 88.7	149.5 89.1	11
12	133.9 89.4	134.7 90.0	135.5 90.6	136.4 91.1	137.2 91.7	138.0 92.2	138.9 92.8	139.7 93.3	140.6 93.8	141.5 94.3	142.4 94.8	143.3 95.3	144.2 95.8	145.1 96.3	12
13	129.3 95.9	130.1 96.5	130.9 97.1	131.7 97.7	132.5 98.3	133.3 98.9	134.1 99.5	134.9 100.1	135.8 100.6	136.7 101.1	137.6 101.6	138.5 102.1	139.4 102.6	140.3 103.1	13
14	124.4 102.1	125.2 102.8	126.0 103.4	126.8 104.0	127.5 104.7	128.3 105.3	129.1 105.9	129.9 106.6	130.8 107.1	131.7 107.6	132.6 108.1	133.5 108.6	134.4 109.1	135.3 109.6	14
15	119.3 103.1	120.0 103.8	120.8 104.5	121.5 105.1	122.3 105.8	123.0 106.4	123.8 107.1	124.5 107.7	125.3 108.3	126.1 108.9	126.9 109.5	127.7 110.1	128.5 110.7	129.3 111.3	15
16	113.8 113.8	114.5 114.5	115.3 115.3	116.0 116.0	116.7 116.7	117.4 117.4	118.1 118.1	118.8 118.8	119.5 119.5	120.2 120.2	121.0 121.0	121.7 121.7	122.5 122.5	123.2 123.2	16
17	161.0 02.8	162.0 02.8	163.0 02.8	164.0 02.9	165.0 02.9	166.0 02.9	167.0 02.9	168.0 02.9	169.0 02.9	170.0 02.9	171.0 02.9	172.0 02.9	173.0 02.9	174.0 02.9	17
18	160.9 05.6	161.9 05.7	162.9 05.7	163.9 05.7	164.9 05.8	165.9 05.8	166.9 05.8	167.9 05.8	168.9 05.8	169.9 05.8	170.9 05.8	171.9 05.8	172.9 05.8	173.9 05.8	18
19	160.8 08.4	161.8 08.5	162.8 08.5	163.8 08.6	164.8 08.6	165.8 08.7	166.8 08.7	167.8 08.7	168.8 08.7	169.8 08.7	170.8 08.7	171.8 08.7	172.8 08.7	173.8 08.7	19
20	160.6 11.2	161.6 11.3	162.6 11.4	163.6 11.4	164.6 11.5	165.6 11.6	166.6 11.6	167.6 11.7	168.6 11.7	169.6 11.7	170.6 11.7	171.6 11.7	172.6 11.7	173.6 11.7	20
21	160.4 14.0	161.4 14.1	162.4 14.2	163.4 14.3	164.4 14.4	165.4 14.5	166.4 14.6	167.4 14.6	168.4 14.6	169.4 14.6	170.4 14.6	171.4 14.6	172.4 14.6	173.4 14.6	21
22	160.1 16.8	161.1 16.9	162.1 17.0	163.1 17.1	164.1 17.2	165.1 17.3	166.1 17.4	167.1 17.5	168.1 17.5	169.1 17.5	170.1 17.5	171.1 17.5	172.1 17.5	173.1 17.5	22
23	159.8 19.6	160.8 19.7	161.8 19.9	162.8 20.0	163.8 20.1	164.8 20.2	165.8 20.4	166.8 20.5	167.8 20.6	168.8 20.7	169.8 20.8	170.8 20.9	171.8 21.0	172.8 21.1	23
24	159.4 22.4	160.4 22.5	161.4 22.7	162.4 22.8	163.4 23.0	164.4 23.1	165.4 23.2	166.4 23.4	167.4 23.5	168.4 23.6	169.4 23.7	170.4 23.8	171.4 23.9	172.4 24.0	24
25	159.0 25.2	160.0 25.3	161.0 25.5	162.0 25.7	163.0 25.8	164.0 26.0	165.0 26.1	166.0 26.3	167.0 26.4	168.0 26.5	169.0 26.6	170.0 26.7	171.0 26.8	172.0 26.9	25
26	158.6 28.0	159.5 28.1	160.5 28.3	161.5 28.5	162.5 28.7	163.5 28.8	164.5 29.0	165.5 29.1	166.5 29.2	167.5 29.3	168.5 29.4	169.5 29.5	170.5 29.6	171.5 29.7	26
27	158.0 30.7	159.0 30.9	160.0 31.1	161.0 31.3	162.0 31.5	163.0 31.7	164.0 31.9	165.0 32.1	166.0 32.2	167.0 32.3	168.0 32.4	169.0 32.5	170.0 32.6	171.0 32.7	27
28	157.5 33.5	158.5 33.7	159.4 33.9	160.4 34.1	161.4 34.3	162.4 34.5	163.4 34.7	164.4 34.9	165.4 35.0	166.4 35.1	167.4 35.2	168.4 35.3	169.4 35.4	170.4 35.5	28
29	156.9 36.2	157.8 36.4	158.8 36.7	159.8 36.9	160.8 37.1	161.7 37.3	162.7 37.6	163.7 37.8	164.7 38.0	165.7 38.1	166.7 38.2	167.7 38.3	168.7 38.4	169.7 38.5	29
30	156.2 38.9	157.2 39.2	158.2 39.4	159.1 39.7	160.1 39.9	161.1 40.2	162.0 40.4	163.0 40.6	164.0 40.8	165.0 41.0	166.0 41.2	167.0 41.4	168.0 41.6	169.0 41.8	30
31	155.5 41.7	156.5 41.9	157.4 42.2	158.4 42.4	159.4 42.7	160.3 43.0	161.3 43.2	162.3 43.5	163.3 43.7	164.3 43.9	165.3 44.1	166.3 44.3	167.3 44.5	168.3 44.7	31
32	154.8 44.4	155.7 44.7	156.7 44.9	157.6 45.2	158.6 45.5	159.6 45.8	160.6 46.0	161.6 46.3	162.6 46.5	163.6 46.8	164.6 47.0	165.6 47.2	166.6 47.5	167.6 47.7	32
33	154.0 47.1	154.9 47.4	155.9 47.7	156.8 47.9	157.8 48.2	158.7 48.5	159.7 48.8	160.7 49.1	161.7 49.4	162.7 49.7	163.7 49.9	164.7 50.2	165.7 50.5	166.7 50.7	33
34	153.1 49.8	154.1 50.1	155.0 50.4	156.0 50.7	156.9 51.0	157.9 51.3	158.8 51.6	159.8 51.9	160.8 52.2	161.8 52.5	162.8 52.8	163.8 53.1	164.8 53.4	165.8 53.7	34
35	152.2 52.4	153.2 52.7	154.1 53.1	155.1 53.4	156.0 53.7	157.0 54.0	158.0 54.3	159.0 54.6	160.0 54.9	161.0 55.2	162.0 55.5	163.0 55.8	164.0 56.1	165.0 56.4	35
36	151.3 55.1	152.2 55.4	153.2 55.7	154.1 56.1	155.0 56.4	156.0 56.7	157.0 57.0	158.0 57.3	159.0 57.6	160.0 57.9	161.0 58.2	162.0 58.5	163.0 58.8	164.0 59.1	36
37	150.3 57.7	151.2 58.1	152.2 58.4	153.1 58.8	154.0 59.1	155.0 59.5	156.0 59.8	157.0 60.2	158.0 60.5	159.0 60.8	160.0 61.1	161.0 61.4	162.0 61.7	163.0 62.0	37
38	149.3 60.3	150.2 60.7	151.1 61.1	152.1 61.4	153.0 61.8	154.0 62.2	155.0 62.6	156.0 62.9	157.0 63.2	158.0 63.5	159.0 63.8	160.0 64.1	161.0 64.4	162.0 64.7	38
39	148.2 62.9	149.1 63.3	150.0 63.7	151.0 64.1	151.9 64.5	152.8 64.9	153.7 65.3	154.6 65.6	155.6 66.0	156.5 66.3	157.5 66.6	158.4 66.9	159.4 67.2	160.4 67.5	39
40	147.1 65.5	148.0 65.9	148.9 66.3	149.8 66.7	150.7 67.1	151.6 67.5	152.6 67.9	153.5 68.3	154.5 68.6	155.4 68.9	156.4 69.2	157.4 69.5	158.4 69.8	159.4 70.1	40
41	145.9 68.0	146.8 68.5	147.7 68.9	148.6 69.3	149.5 69.7	150.4 70.2	151.4 70.6	152.3 71.0	153.3 71.4	154.3 71.8	155.3 72.2	156.3 72.6	157.3 72.9	158.3 73.2	41
42	144.7 70.6	145.6 71.0	146.5 71.5	147.4 71.9	148.3 72.3	149.2 72.8	150.1 73.2	151.0 73.6	152.0 74.0	153.0 74.4	154.0 74.8	155.0 75.2	156.0 75.6	157.0 75.9	42
43	143.5 73.1	144.3 73.5	145.2 74.0	146.1 74.5	147.0 74.9	147.9 75.4	148.8 75.8	149.7 76.3	150.6 76.7	151.5 77.1	152.4 77.5	153.3 77.9	154.2 78.3	155.1 78.7	43
44	142.2 75.6	143.0 76.1	143.9 76.5	144.8 77.0	145.7 77.5	146.6 77.9	147.5 78.4	148.4 78.8	149.3 79.2	150.2 79.6	151.1 80.0	152.0 80.4	152.9 80.8	153.8 81.2	44
45	140.8 78.1	141.7 78.5	142.6 79.0	143.4 79.5	144.3 80.0	145.2 80.5	146.1 81.0	146.9 81.4	147.8 81.8	148.7 82.2	149.6 82.6	150.5 83.0	151.4 83.4	152.3 83.8	45
46	139.4 80.5	140.3 81.0	141.2 81.5	142.0 82.0	142.9 82.5	143.8 83.0	144.6 83.5	145.5 84.0	146.4 84.4	147.3 84.8	148.2 85.2	149.1 85.6	150.0 86.0	150.9 86.4	46
47	138.0 82.9	138.9 83.4	139.7 84.0	140.6 84.5	141.4 85.0	142.3 85.5	143.1 86.0	144.0 86.4	144.9 86.8	145.8 87.2	146.7 87.6	147.6 88.0	148.5 88.4	149.4 88.8	47
48	136.5 85.3	137.4 85.8	138.2 86.4	139.1 86.9	139.9 87.4	140.8 88.0	141.6 88.5	142.5 89.0	143.4 89.4	144.3 89.8	145.2 90.2	146.1 90.6	147.0 91.0	147.9 91.4	48
49	135.0 87.7	135.9 88.2	136.7 88.8	137.5 89.3	138.4 89.9	139.2 90.4	140.1 90.9	141.0 91.3	141.9 91.7	142.8 92.1	143.7 92.5	144.6 92.9	145.5 93.3	146.4 93.7	49
50	133.5 90.0	134.3 90.6	135.1 91.1	136.0 91.7	136.8 92.3	137.6 92.8	138.5 93.3	139.4 93.7	140.3 94.1	141.2 94.5	142.1 94.9	143.0 95.3	143.9 95.7	144.8 96.1	50
51	131.9 92.3	132.7 92.9	133.5 93.5	134.3 94.1	135.2 94.6	136.0 95.2	136.8 95.7	137.6 96.1	138.5 96.5	139.4 96.9	140.3 97.3	141.2 97.7	142.1 98.1	143.0 98.5	51
52	130.3 94.6	131.1 95.2	131.9 95.8	132.7 96.4	133.5 97.0	134.3 97.6									

Traverse Table.

(x.)

169				170		171		172		173		174		175		176		
Cross	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.
1	168.8	08.3	169.8	08.3	170.8	08.4	171.8	08.4	172.8	08.5	173.8	08.5	174.8	08.6	175.8	08.6	176.8	08.6
2	168.2	16.6	169.2	16.7	170.2	16.8	171.2	16.9	172.2	17.0	173.2	17.1	174.2	17.2	175.2	17.3	176.2	17.3
3	167.2	24.8	168.2	24.9	169.2	25.1	170.2	25.2	171.2	25.4	172.2	25.5	173.2	25.7	174.2	25.8	175.2	25.8
4	165.7	33.0	166.7	33.2	167.7	33.4	168.7	33.6	169.7	33.8	170.7	34.0	171.6	34.1	172.6	34.3	173.6	34.3
5	163.9	41.1	164.9	41.3	165.9	41.6	166.8	41.8	167.8	42.0	168.8	42.3	169.8	42.5	170.7	42.8	171.7	42.8
6	161.7	49.1	162.7	49.3	163.6	49.6	164.6	49.9	165.6	50.2	166.5	50.5	167.5	50.8	168.4	51.1	169.4	51.1
7	159.1	56.9	160.1	57.3	161.0	57.6	161.9	57.9	162.9	58.3	163.8	58.6	164.8	59.0	165.7	59.3	166.7	59.3
8	156.1	64.7	157.1	65.1	158.0	65.4	158.9	65.8	159.8	66.2	160.8	66.6	161.7	67.0	162.6	67.4	163.6	67.4
9	152.8	72.3	153.7	72.7	154.6	73.1	155.5	73.6	156.4	74.0	157.3	74.4	158.2	74.8	159.1	75.3	160.1	75.3
10	149.0	79.7	149.9	80.1	150.8	80.6	151.7	81.1	152.6	81.5	153.5	82.0	154.3	82.5	155.2	83.0	156.2	83.0
11	145.0	86.9	145.8	87.4	146.7	87.9	147.5	88.4	148.4	88.9	149.2	89.4	150.1	90.0	151.0	90.5	152.0	90.5
12	140.5	93.9	141.3	94.4	142.2	95.0	143.0	95.6	143.8	96.1	144.7	96.7	145.5	97.2	146.3	97.8	147.3	97.8
13	135.7	100.7	136.5	101.3	137.3	101.9	138.1	102.5	138.9	103.1	139.8	103.7	140.6	104.2	141.4	104.8	142.4	104.8
14	130.6	107.2	131.4	107.8	132.2	108.5	133.0	109.1	133.7	109.7	134.5	110.4	135.3	111.0	136.0	111.6	137.0	111.6
15	125.2	113.5	126.0	114.2	126.7	114.8	127.4	115.5	128.2	116.2	128.9	116.8	129.7	117.5	130.4	118.2	131.0	118.2
16	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	125.1	124.4
17	169.0	02.9	170.0	03.0	171.0	03.0	172.0	03.0	173.0	03.0	174.0	03.0	175.0	03.1	176.0	03.1	177.0	03.1
18	168.9	05.9	169.9	05.9	170.9	06.0	171.9	06.0	172.9	06.0	173.9	06.1	174.9	06.1	175.9	06.1	176.9	06.1
19	168.8	08.8	169.8	08.9	170.8	08.9	171.8	09.0	172.8	09.1	173.8	09.1	174.8	09.2	175.8	09.2	176.8	09.2
20	168.6	11.8	169.6	11.9	170.6	11.9	171.6	12.0	172.6	12.1	173.6	12.1	174.6	12.2	175.6	12.3	176.6	12.3
21	168.4	14.7	169.4	14.8	170.3	14.9	171.3	15.0	172.3	15.1	173.3	15.2	174.3	15.3	175.3	15.3	176.3	15.3
22	168.1	17.7	169.1	17.8	170.1	17.9	171.1	18.0	172.1	18.1	173.1	18.2	174.0	18.3	175.0	18.4	176.0	18.4
23	167.7	20.6	168.7	20.7	169.7	20.8	170.7	21.0	171.7	21.1	172.7	21.2	173.7	21.3	174.7	21.4	175.7	21.4
24	167.1	23.6	168.3	23.7	169.3	23.8	170.3	23.9	171.3	24.1	172.3	24.2	173.3	24.4	174.3	24.5	175.3	24.5
25	166.9	26.4	167.9	26.6	168.9	26.8	169.9	26.9	170.9	27.1	171.9	27.2	172.8	27.4	173.8	27.5	174.8	27.5
26	166.4	29.3	167.4	29.5	168.4	29.7	169.4	29.9	170.4	30.0	171.4	30.2	172.3	30.4	173.3	30.6	174.3	30.6
27	165.9	32.2	166.9	32.4	167.9	32.6	168.8	32.8	169.8	33.0	170.8	33.2	171.8	33.4	172.8	33.6	173.8	33.6
28	165.3	35.1	166.3	35.3	167.3	35.6	168.2	35.8	169.2	36.0	170.2	36.2	171.2	36.4	172.2	36.6	173.2	36.6
29	164.7	38.0	165.6	38.2	166.6	38.5	167.6	38.7	168.6	38.9	169.5	39.1	170.5	39.4	171.5	39.6	172.5	39.6
30	164.0	40.9	165.0	41.1	165.9	41.4	166.9	41.6	167.9	41.9	168.8	42.1	169.8	42.3	170.8	42.6	171.7	42.6
31	163.2	43.7	164.2	44.0	165.2	44.3	166.1	44.5	167.1	44.8	168.1	45.0	169.0	45.3	170.0	45.6	171.0	45.6
32	162.5	46.6	163.4	46.9	164.4	47.1	165.3	47.4	166.3	47.7	167.3	48.0	168.2	48.2	169.2	48.5	170.2	48.5
33	161.6	49.4	162.6	49.7	163.5	50.0	164.5	50.3	165.4	50.6	166.4	50.9	167.4	51.2	168.3	51.5	169.3	51.5
34	160.7	52.2	161.7	52.5	162.6	52.8	163.6	53.2	164.5	53.5	165.5	53.8	166.4	54.1	167.4	54.4	168.4	54.4
35	159.9	55.0	160.7	55.3	161.7	55.7	162.6	56.0	163.6	56.3	164.5	56.6	165.5	57.0	166.4	57.3	167.4	57.3
36	158.8	57.8	159.7	58.1	160.7	58.5	161.6	58.8	162.6	59.2	163.5	59.5	164.4	59.9	165.4	60.2	166.4	60.2
37	157.8	60.6	158.7	60.9	159.6	61.3	160.6	61.6	161.5	62.0	162.4	62.4	163.4	62.7	164.3	63.1	165.3	63.1
38	156.7	63.3	157.6	63.7	158.5	64.1	159.5	64.4	160.4	64.8	161.3	65.2	162.3	65.6	163.2	65.9	164.9	65.9
39	155.6	66.0	156.5	66.4	157.4	66.8	158.3	67.2	159.2	67.6	160.2	68.0	161.1	68.4	162.0	68.8	163.7	68.8
40	154.4	68.7	155.3	69.1	156.2	69.6	157.1	70.0	158.0	70.4	159.0	70.8	159.9	71.2	160.8	71.6	161.7	71.6
41	153.2	71.4	154.1	71.8	155.0	72.3	155.9	72.7	156.8	73.1	157.7	73.5	158.6	74.0	159.5	74.4	160.5	74.4
42	151.9	74.1	152.8	74.5	153.7	75.0	154.6	75.4	155.5	75.8	156.4	76.3	157.3	76.7	158.2	77.2	159.4	77.2
43	150.6	76.7	151.5	77.2	152.4	77.6	153.3	78.1	154.1	78.5	155.0	79.0	155.9	79.4	156.8	79.9	157.9	79.9
44	149.2	79.3	150.1	79.8	151.0	80.3	151.9	80.7	152.7	81.2	153.6	81.7	154.5	82.2	155.4	82.6	156.6	82.6
45	147.8	81.9	148.7	82.4	149.6	82.9	150.4	83.4	151.3	83.9	152.2	84.4	153.1	84.8	153.9	85.3	154.9	85.3
46	146.4	84.5	147.2	85.0	148.1	85.5	149.0	86.0	149.8	86.5	150.7	87.0	151.6	87.5	152.4	88.0	153.0	88.0
47	144.9	87.0	145.7	87.6	146.6	88.1	147.4	88.6	148.3	89.1	149.1	89.6	150.0	90.1	150.9	90.6	151.6	90.6
48	143.3	89.6	144.2	90.1	145.0	90.6	145.9	91.1	146.7	91.7	147.6	92.2	148.4	92.7	149.3	93.3	150.3	93.3
49	141.7	92.0	142.6	92.6	143.4	93.1	144.3	93.7	145.1	94.2	145.9	94.8	146.8	95.3	147.6	95.9	149.7	95.9
50	140.1	94.5	140.9	95.1	141.8	95.6	142.6	96.2	143.4	96.7	144.3	97.3	145.1	97.9	145.9	98.4	150.6	98.4
51	138.4	96.9	139.3	97.5	140.1	98.1	140.9	98.7	141.7	99.2	142.5	99.8	143.4	100.4	144.2	100.9	153.3	100.9
52	136.7	99.3	137.5	99.9	138.3	100.5	139.2	101.1	140.0	101.7	140.8	102.3	141.6	102.9	142.4	103.5	155.4	103.5
53	135.0	101.7	135.0	102.3	136.6	102.9	137.4	103.5	138.2	104.1	139.0	104.7	139.8	105.3	140.6	105.9	158.3	105.9
54	133.2	104.0	134.0	104.7	134.7	105.3	135.5	105.9	136.3	106.5	137.1	107.1	137.9	107.7	138.7	108.4	161.2	108.4
55	131.3	106.4	132.1	107.0	132.9	107.6	133.7	108.2	134.4	108.9	135.2	109.5	136.0	110.1	136.8	110.8	164.1	110.8
56	129.5	108.6	130.2	109.3	131.0	109.9	131.8	110.6	132.5	111.2	133.3	111.8	134.1	112.5	134.8	113.1	167.0	113.1
57	127.5	110.9	128.3	111.5	129.1	112.2	129.8	112.8	130.6	113.5	131.3	114.2	132.1	114.8	132.8	115.5	170.0	115.5
58	125.6	113.1	126.3	113.8	127.1	114.4	127.8	115.1	128.6	115.9	129.3	116.4	130.1	117.1	130.8	117.8	172.9	117.8
59	123.6	115.3	124.3	115.9	125.1	116.6	125.8	117.3	126.5	118.0	127.3	118.7	128.0	119.3	128.7	120.0	175.8	120.0
60	121.6	117.4	122.3	118.1	123.0	118.8	123.7	119.5	124.4	120.2	125.2	120.9	125.9	121.6	126.6	122.3	178.7	122.3
61	119.5	119.5	120.2	120.2	120.9	120.9	121.6	121.6	122.3	122.3	123.0	123.0	123.7	123.7	124.4	124.4	181.6	124.4
Cross	Dep.	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.	Diff.	Lat.

Traverse Table.

(x.)

[illegible]

Traverse Table.

(x)

185			186			187			188			189			190			191			192		
Cross	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Cross		
1	184.8	09.1	185.8	09.1	186.8	09.2	187.8	09.2	188.8	09.3	189.8	09.3	190.8	09.4	191.8	09.4							
2	184.1	18.1	185.1	18.2	186.1	18.3	187.1	18.4	188.1	18.5	189.1	18.6	190.1	18.7	191.1	18.8							
3	183.0	27.1	184.0	27.3	185.0	27.4	186.0	27.6	186.9	27.7	187.9	27.9	188.9	28.0	189.9	28.2							
4	181.4	36.1	182.4	36.3	183.4	36.5	184.4	36.7	185.4	36.9	186.3	37.1	187.3	37.3	188.3	37.5	7						
5	179.5	45.0	180.4	45.2	181.4	45.4	182.4	45.7	183.3	45.9	184.3	46.2	185.3	46.4	186.2	46.7							
6	177.0	53.7	178.0	54.0	179.0	54.3	179.9	54.6	180.9	54.9	181.8	55.1	182.8	55.4	183.7	55.7							
7	174.2	62.3	175.1	62.7	176.1	63.0	177.0	63.3	177.9	63.7	178.9	64.0	179.8	64.3	180.8	64.7							
8	170.9	70.8	171.8	71.2	172.8	71.6	173.7	71.9	174.6	72.3	175.5	72.7	176.5	73.1	177.4	73.5	6						
9	167.2	79.1	168.1	79.5	169.0	80.0	169.9	80.4	170.9	80.8	171.8	81.2	172.7	81.7	173.6	82.1							
10	163.2	87.2	164.0	87.7	164.9	88.1	165.8	88.6	166.7	89.1	167.6	89.6	168.5	90.0	169.3	90.5							
11	158.7	95.1	159.5	95.6	160.4	96.1	161.2	96.6	162.1	97.2	163.0	97.7	163.8	98.2	164.7	98.7							
12	153.8	102.8	154.6	103.3	155.5	103.9	156.3	104.4	157.1	105.0	158.0	105.6	158.8	106.1	159.6	107.7	5						
13	148.6	110.2	149.4	110.8	150.2	111.4	151.0	112.0	151.8	112.6	152.6	113.2	153.4	113.8	154.2	114.4							
14	143.0	117.4	143.8	118.0	144.5	118.6	145.3	119.3	146.1	119.9	146.9	120.5	147.6	121.2	148.4	121.8							
15	137.1	124.2	137.8	124.9	138.6	125.6	139.3	126.2	140.0	126.9	140.8	127.6	141.5	128.3	142.3	128.9							
16	130.8	130.8	131.5	131.5	132.2	132.2	132.9	132.9	133.6	133.6	134.3	134.3	135.1	135.1	135.8	135.8	4						
17	185.0	03.2	186.0	03.2	187.0	03.3	188.0	03.3	189.0	03.3	190.0	03.3	191.0	03.3	192.0	03.4	89						
18	184.9	06.5	185.9	06.5	186.9	06.5	187.9	06.6	188.9	06.6	189.9	06.6	190.9	06.7	191.9	06.7	88						
19	184.7	09.7	185.7	09.7	186.7	09.8	187.7	09.8	188.7	09.9	189.7	09.9	190.7	10.0	191.7	10.0	87						
20	184.5	12.9	185.5	13.0	186.5	13.0	187.5	13.1	188.5	13.2	189.5	13.3	190.5	13.3	191.5	13.4	86						
21	184.3	16.1	185.3	16.2	186.3	16.3	187.3	16.4	188.3	16.5	189.3	16.6	190.3	16.6	191.3	16.7	85						
22	184.0	19.3	185.0	19.4	186.0	19.5	187.0	19.7	188.0	19.8	189.0	19.9	190.0	20.0	190.9	20.1	84						
23	183.6	22.5	184.6	22.7	185.6	22.8	186.6	22.9	187.6	23.0	188.6	23.2	189.6	23.3	190.6	23.4	83						
24	183.2	25.7	184.2	25.9	185.2	26.0	186.2	26.2	187.2	26.3	188.2	26.4	189.1	26.6	190.1	26.7	82						
25	182.7	28.9	183.7	29.1	184.7	29.3	185.7	29.4	186.7	29.6	187.7	29.7	188.6	29.9	189.6	30.0	81						
26	182.2	32.1	183.2	32.3	184.2	32.5	185.1	32.6	186.1	32.8	187.1	33.0	188.1	33.2	189.1	33.3	80						
27	181.6	35.3	182.6	35.5	183.6	35.7	184.5	35.9	185.5	36.1	186.5	36.3	187.5	36.4	188.5	36.6	79						
28	181.0	38.5	181.9	38.7	182.9	38.9	183.9	39.1	184.9	39.3	185.8	39.5	186.8	39.7	187.8	39.9	78						
29	180.3	41.6	181.2	41.8	182.2	42.1	183.2	42.3	184.2	42.5	185.1	42.7	186.1	43.0	187.1	43.2	77						
30	179.5	44.8	180.5	45.0	181.4	45.2	182.4	45.5	183.4	45.7	184.4	46.0	185.3	46.2	186.3	46.4	76						
31	178.7	47.9	179.7	48.1	180.6	48.4	181.6	48.7	182.6	48.9	183.5	49.2	184.5	49.4	185.5	49.7	75						
32	177.8	51.0	178.8	51.3	179.8	51.5	180.7	51.8	181.7	52.1	182.6	52.4	183.6	52.6	184.6	52.9	74						
33	176.9	54.1	177.9	54.4	178.8	54.7	179.8	55.0	180.7	55.3	181.7	55.6	182.7	55.8	183.6	56.1	73						
34	175.9	57.2	176.9	57.5	177.8	57.8	178.8	58.1	179.7	58.4	180.7	58.7	181.7	59.0	182.6	59.3	72						
35	174.9	60.2	175.9	60.6	176.8	60.9	177.8	61.2	178.7	61.5	179.6	61.9	180.6	62.2	181.5	62.5	71						
36	173.8	63.3	174.8	63.6	175.7	64.0	176.7	64.3	177.6	64.6	178.5	65.0	179.5	65.3	180.4	65.7	70						
37	172.7	66.3	173.6	66.7	174.6	67.0	175.5	67.4	176.4	67.7	177.4	68.1	178.3	68.4	179.2	68.8	69						
38	171.5	69.3	172.5	69.7	173.4	70.1	174.3	70.4	175.2	70.8	176.2	71.2	177.1	71.5	178.0	71.9	68						
39	170.3	72.3	171.2	72.7	172.1	73.1	173.1	73.5	174.0	73.8	174.9	74.2	175.8	74.6	176.7	75.0	67						
40	169.0	75.2	169.9	75.7	170.8	76.1	171.7	76.5	172.7	76.9	173.6	77.3	174.5	77.7	175.4	78.1	66						
41	167.7	78.2	168.6	78.6	169.5	79.0	170.4	79.5	171.3	79.9	172.2	80.3	173.1	80.7	174.0	81.1	65						
42	166.3	81.1	167.2	81.5	168.1	82.0	169.0	82.4	169.9	82.9	170.8	83.3	171.7	83.7	172.6	84.2	64						
43	164.8	84.0	165.7	84.4	166.6	84.9	167.5	85.4	168.4	85.8	169.3	86.3	170.2	86.7	171.1	87.2	63						
44	163.3	86.9	164.2	87.3	165.1	87.8	166.0	88.3	166.9	88.7	167.8	89.2	168.6	89.7	169.5	90.1	62						
45	161.8	89.7	162.7	90.2	163.6	90.7	164.4	91.1	165.3	91.6	166.2	92.1	167.1	92.6	167.9	93.1	61						
46	160.2	92.5	161.1	93.0	161.9	93.5	162.8	94.0	163.7	94.5	164.5	95.0	165.4	95.5	166.3	96.0	60						
47	158.6	95.3	159.4	95.8	160.3	96.3	161.1	96.8	162.0	97.3	162.9	97.9	163.7	98.4	164.6	98.9	59						
48	156.9	98.0	157.7	98.6	158.6	99.1	159.4	99.6	160.3	100.2	161.1	100.7	162.0	101.2	162.8	101.7	58						
49	155.2	100.8	156.0	101.3	156.8	101.8	157.7	102.4	158.5	102.9	159.3	103.5	160.2	104.0	161.0	104.6	57						
50	153.4	103.5	154.2	104.0	155.0	104.6	155.9	105.1	156.7	105.7	157.5	106.2	158.3	106.8	159.2	107.4	56						
51	151.5	106.1	152.4	106.7	153.2	107.3	154.0	107.8	154.8	108.4	155.6	109.0	156.5	109.6	157.3	110.1	55						
52	149.7	108.7	150.5	109.3	151.3	109.9	152.1	110.5	152.9	111.1	153.7	111.7	154.5	112.3	155.3	112.9	54						
53	147.7	111.3	148.5	111.9	149.3	112.5	150.1	113.1	150.9	113.7	151.7	114.3	152.5	114.9	153.3	115.6	53						
54	145.8	113.9	146.6	114.5	147.4	115.1	148.1	115.7	148.9	116.4	149.7	117.0	150.5	117.6	151.3	118.2	52						
55	143.8	116.4	144.5	117.1	145.3	117.7	146.1	118.3	146.9	118.9	147.7	119.6	148.4	120.2	149.2	120.8	51						
56	141.7	118.9	142.5	119.6	143.3	120.2	144.0	120.8	144.8	121.5	145.5	122.1	146.3	122.8	147.1	123.4	50						
57	139.6	121.4	140.4	122.0	141.1	122.7	141.9	123.3	142.6	124.0	143.4	124.7	144.1	125.3	144.9	126.0	49						
58	137.5	123.8	138.2	124.5	139.0	125.1	139.7	125.8	140.5	126.5	141.2	127.1	141.9	127.8	142.7	128.5	48						
59	135.3	126.2	136.0	126.9	136.8	127.5	137.5	128.2	138.2	128.9	139.0	129.6	139.7	130.3	140.4	130.9	47						
60	133.1	128.5	133.8	129.2	134.5	129.9	135.2	130.6	136.0	131.3	136.7	132.0	137.4	132.7	138.1	133.4	46						
61	130.8	130.8	131.5	131.5	132.2	132.2	132.9	132.9	133.6	133.6	134.4	134.4	135.1	135.1	135.8	135.8	45						
Cross	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Cross	Dep.	Diff. Lat.	Dep.	Diff. Lat.		

(x.)		Traverse Table.																														
Distance. 193			194			195			196			197			198			199			200											
Crse.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Crse.	Crse.								
1	192.8	09.5	193.8	09.5	194.8	09.6	195.8	09.6	196.8	09.7	197.8	09.7	198.8	09.8	199.8	09.8	192.1	18.9	193.1	19.0	194.1	19.1	195.1	19.2	196.1	19.3	197.0	19.4	198.0	19.5	199.0	19.6
2	190.9	28.3	191.9	28.5	192.9	28.6	193.9	28.8	194.9	28.9	195.9	29.0	196.8	29.2	197.8	29.3	190.2	37.7	191.2	37.8	192.2	38.0	193.2	38.2	194.2	38.4	195.2	38.6	196.2	38.8	197.2	38.9
3	187.2	46.9	188.2	47.1	189.2	47.4	190.1	47.6	191.1	47.9	192.1	48.1	193.0	48.4	194.0	48.6	187.4	56.0	188.5	56.3	189.6	56.6	190.7	56.9	191.8	57.2	192.9	57.5	194.0	57.8	191.4	58.1
4	181.7	65.0	182.7	65.4	183.6	65.7	184.5	66.0	185.5	66.4	186.4	66.7	187.4	67.0	188.3	67.4	181.7	73.9	182.7	74.2	183.6	74.6	184.5	75.0	185.5	75.4	186.9	75.8	188.9	76.2	184.8	76.5
5	174.5	82.5	175.4	83.0	176.3	83.4	177.2	83.8	178.1	84.2	179.0	84.7	179.9	85.1	180.8	85.5	174.5	91.0	175.4	91.4	176.2	91.9	177.9	92.4	178.7	92.9	179.4	93.3	175.5	93.8	176.4	94.3
6	165.5	99.2	166.4	99.7	167.3	100.2	168.1	100.8	169.0	101.3	169.8	101.8	170.7	102.3	171.5	102.8	165.5	107.2	166.3	107.8	168.2	108.3	169.0	109.4	169.8	109.9	170.0	170.1	165.5	110.6	166.3	111.1
7	155.0	115.0	155.8	115.6	156.6	116.2	157.4	116.8	158.2	117.4	159.0	118.0	159.8	118.5	160.6	119.1	155.0	122.4	156.0	123.1	157.0	123.7	158.1	124.3	159.3	125.0	153.1	125.6	153.8	126.2	154.6	126.9
8	149.2	122.4	150.0	123.1	150.7	123.7	151.5	124.3	152.3	125.0	153.1	125.6	153.8	126.2	154.6	126.9	149.2	129.6	143.7	130.3	144.5	130.9	145.2	131.6	146.0	132.3	146.7	133.0	147.4	133.6	148.2	134.3
9	136.5	136.5	137.2	137.2	137.9	137.9	138.6	138.6	139.3	139.3	140.0	140.0	140.7	140.7	141.4	141.4	136.5	143.7	137.2	137.2	137.9	137.9	138.6	138.6	139.3	139.3	140.0	140.0	140.7	140.7	141.4	141.4
10	193.0	03.4	194.0	03.4	195.0	03.4	196.0	03.4	197.0	03.4	198.0	03.5	199.0	03.5	200.0	03.5	193.0	06.7	193.9	06.8	194.9	06.8	195.9	06.8	196.9	06.9	197.9	06.9	198.9	06.9	199.9	07.0
11	192.9	06.7	193.9	06.8	194.9	06.8	195.9	06.8	196.9	06.9	197.9	06.9	198.9	06.9	199.9	07.0	192.9	10.1	193.7	10.2	194.7	10.2	195.7	10.3	196.7	10.3	197.7	10.4	198.7	10.4	199.7	10.5
12	192.7	10.1	193.7	10.2	194.7	10.2	195.7	10.3	196.7	10.3	197.7	10.4	198.7	10.4	199.7	10.5	192.7	13.5	193.5	13.5	194.5	13.6	195.5	13.7	196.5	13.7	197.5	13.8	198.5	13.9	199.5	14.0
13	192.5	13.5	193.5	13.5	194.5	13.6	195.5	13.7	196.5	13.7	197.5	13.8	198.5	13.9	199.5	14.0	192.5	16.8	193.3	16.9	194.3	17.0	195.3	17.1	196.3	17.2	197.2	17.3	198.2	17.3	199.2	17.4
14	192.3	16.8	193.3	16.9	194.3	17.0	195.3	17.1	196.3	17.2	197.2	17.3	198.2	17.3	199.2	17.4	192.3	20.2	192.9	20.3	193.9	20.4	194.9	20.5	195.9	20.6	196.9	20.7	197.9	20.8	198.9	20.9
15	191.9	20.2	192.9	20.3	193.9	20.4	194.9	20.5	195.9	20.6	196.9	20.7	197.9	20.8	198.9	20.9	191.9	23.5	192.6	23.6	193.5	23.8	194.5	23.9	195.5	24.0	196.5	24.1	197.5	24.3	198.5	24.4
16	191.6	23.5	192.6	23.6	193.5	23.8	194.5	23.9	195.5	24.0	196.5	24.1	197.5	24.3	198.5	24.4	191.6	26.9	192.1	27.0	193.1	27.1	194.1	27.3	195.1	27.4	196.1	27.6	197.1	27.7	198.1	27.8
17	191.1	26.9	192.1	27.0	193.1	27.1	194.1	27.3	195.1	27.4	196.1	27.6	197.1	27.7	198.1	27.8	191.1	30.2	191.6	30.3	192.6	30.5	193.6	30.7	194.6	30.8	195.6	31.0	196.5	31.1	197.5	31.3
18	190.6	30.2	191.6	30.3	192.6	30.5	193.6	30.7	194.6	30.8	195.6	31.0	196.5	31.1	197.5	31.3	190.6	33.5	191.1	33.7	192.0	33.9	193.0	34.0	194.0	34.2	195.0	34.4	196.0	34.6	197.0	34.7
19	190.1	33.5	191.1	33.7	192.0	33.9	193.0	34.0	194.0	34.2	195.0	34.4	196.0	34.6	197.0	34.7	190.1	36.8	190.4	37.0	191.4	37.2	192.4	37.4	193.4	37.6	194.4	37.8	195.3	38.0	196.3	38.2
20	189.5	36.8	190.4	37.0	191.4	37.2	192.4	37.4	193.4	37.6	194.4	37.8	195.3	38.0	196.3	38.2	189.5	40.1	189.8	40.3	190.7	40.5	191.7	40.8	192.7	41.0	193.7	41.2	194.7	41.4	195.6	41.6
21	188.8	40.1	189.8	40.3	190.7	40.5	191.7	40.8	192.7	41.0	193.7	41.2	194.7	41.4	195.6	41.6	188.8	43.4	189.0	43.6	190.0	43.9	191.0	44.1	192.0	44.3	192.9	44.5	193.9	44.8	194.9	45.0
22	188.1	43.4	189.0	43.6	190.0	43.9	191.0	44.1	192.0	44.3	192.9	44.5	193.9	44.8	194.9	45.0	188.1	46.7	188.2	46.9	189.2	47.2	190.2	47.4	191.1	47.7	192.1	47.9	193.1	48.1	194.1	48.4
23	187.3	46.7	188.2	46.9	189.2	47.2	190.2	47.4	191.1	47.7	192.1	47.9	193.1	48.1	194.1	48.4	187.3	50.0	187.4	50.2	188.4	50.5	189.3	50.7	190.3	51.0	191.3	51.2	192.3	51.5	193.2	51.8
24	186.4	50.0	187.4	50.2	188.4	50.5	189.3	50.7	190.3	51.0	191.3	51.2	192.3	51.5	193.2	51.8	186.4	53.2	186.5	53.5	187.4	53.7	188.4	54.0	189.4	54.3	190.3	54.6	191.3	54.9	192.3	55.1
25	185.5	53.2	186.5	53.5	187.4	53.7	188.4	54.0	189.4	54.3	190.3	54.6	191.3	54.9	192.3	55.1	185.5	56.4	185.5	56.7	186.5	57.0	187.4	57.3	188.4	57.6	189.3	57.9	190.3	58.2	191.3	58.5
26	184.6	56.4	185.5	56.7	186.5	57.0	187.4	57.3	188.4	57.6	189.3	57.9	190.3	58.2	191.3	58.5	184.6	59.6	184.5	59.9	185.5	60.3	186.4	60.6	187.4	60.9	188.3	61.2	189.3	61.5	190.2	61.8
27	183.6	59.6	184.5	59.9	185.5	60.3	186.4	60.6	187.4	60.9	188.3	61.2	189.3	61.5	190.2	61.8	183.6	62.8	183.4	63.2	184.4	63.5	185.3	63.8	186.3	64.1	187.2	64.5	188.2	64.8	189.1	65.1
28	182.5	62.8	183.4	63.2	184.4	63.5	185.3	63.8	186.3	64.1	187.2	64.5	188.2	64.8	189.1	65.1	182.5	66.0	182.3	66.4	183.2	66.7	184.2	67.0	185.1	67.4	186.1	67.7	187.0	68.1	187.9	68.4
29	181.4	66.0	182.3	66.4	183.2	66.7	184.2	67.0	185.1	67.4	186.1	67.7	187.0	68.1	187.9	68.4	181.4	69.2	181.1	69.5	182.0	69.9	183.0	70.2	183.9	70.6	184.8	71.0	185.8	71.3	186.7	71.7
30	180.2	69.2	181.1	69.5	182.0	69.9	183.0	70.2	183.9	70.6	184.8	71.0	185.8	71.3	186.7	71.7	180.2	72.3	179.9	72.7	180.8	73.0	181.7	73.4	182.7	73.8	183.6	74.1	184.5	74.5	185.4	74.9
31	178.9	72.3	179.9	72.7	180.8	73.0	181.7	73.4	182.7	73.8	183.6	74.1	184.5	74.5	185.4	74.9	178.9	75.4	178.6	75.7	179.5	76.2	180.4	76.6	181.3	77.0	182.3	77.4	183.2	77.8	184.1	78.1
32	177.7	75.4	178.6	75.7	179.5	76.2	180.4	76.6	181.3	77.0	182.3	77.4	183.2	77.8	184.1	78.1	177.7	78.5	177.2	78.9	178.1	79.3	179.1	79.7	180.0	80.1	180.9	80.5	181.8	80.9	182.7	81.3
33	176.3	78.5	177.2	78.9	178.1	79.3	179.1	79.7	180.0	80.1	180.9	80.5	181.8	80.9	182.7	81.3	176.3	81.6	175.8	82.0	176.7	82.4	177.6	82.8	178.5	83.3	179.4	83.7	180.4	84.1	181.3	84.5
34	174.9	81.6	175.8	82.0	176.7	82.4	177.6	82.8	178.5	83.3	179.4	83.7	180.4	84.1	181.3	84.5	174.9	84.6	174.4	85.0	175.3	85.5	176.2	85.9	177.1	86.4	178.0	86.8	178.9	87.2	179.8	87.7
35	173.5.8</																															

Traverse Table.

(x.)

Distance. 201		202		203		204		205		206		207		208		One Foot
Crs.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	
1	200.8 09.9	201.8 09.9	202.8 10.0	203.8 10.0	204.8 10.1	205.8 10.1	206.8 10.2	207.8 10.2	208.8 10.2	209.8 10.2	210.8 10.2	211.8 10.2	212.8 10.2	213.8 10.2	214.8 10.2	7
2	195.0 48.8	195.9 49.1	196.9 49.3	197.9 49.6	198.9 49.8	199.8 50.1	200.8 50.3	201.8 50.5	202.8 50.7	203.8 50.9	204.8 51.1	205.8 51.3	206.8 51.5	207.8 51.7	208.8 51.9	6
3	189.2 67.7	190.2 68.0	191.1 68.4	192.1 68.7	193.0 69.1	194.0 69.4	194.9 69.7	195.8 70.1	196.8 70.4	197.7 70.7	198.7 71.0	199.6 71.3	200.6 71.6	201.5 71.9	202.5 72.2	5
4	185.7 76.9	186.6 77.3	187.6 77.7	188.5 78.1	189.4 78.5	190.3 78.8	191.2 79.2	192.2 79.6	193.1 80.0	194.0 80.3	194.9 80.7	195.8 81.0	196.8 81.4	197.7 81.7	198.7 82.1	4
5	181.7 85.9	182.6 86.4	183.5 86.8	184.4 87.2	185.3 87.7	186.2 88.1	187.1 88.5	188.0 88.9	188.9 89.3	189.8 89.7	190.7 90.1	191.6 90.5	192.5 90.9	193.4 91.3	194.3 91.7	3
6	177.3 94.7	178.2 95.2	179.0 95.7	179.9 96.2	180.8 96.6	181.7 97.1	182.6 97.6	183.4 98.0	184.3 98.5	185.2 98.9	186.1 99.4	187.0 99.8	187.9 100.3	188.8 100.7	189.7 101.2	2
7	172.4 103.3	173.3 103.8	174.1 104.4	175.0 104.9	175.8 105.4	176.7 105.9	177.5 106.4	178.4 106.9	179.3 107.4	180.2 107.9	181.1 108.4	182.0 108.9	182.9 109.4	183.8 109.9	184.7 110.4	1
8	167.1 111.7	168.0 112.2	168.8 112.8	169.6 113.3	170.4 113.9	171.3 114.4	172.1 115.0	172.9 115.6	173.8 116.1	174.7 116.7	175.6 117.2	176.5 117.8	177.4 118.3	178.3 118.9	179.2 119.4	0
9	161.4 119.7	162.2 120.3	163.0 120.9	163.9 121.5	164.7 122.1	165.5 122.7	166.3 123.3	167.1 123.9	168.0 124.5	168.8 125.1	169.7 125.7	170.6 126.3	171.5 126.9	172.4 127.5	173.3 128.1	0
10	155.4 127.5	156.1 128.1	156.9 128.8	157.7 129.4	158.5 130.0	159.2 130.7	160.0 131.3	160.8 132.0	161.6 132.6	162.5 133.3	163.3 133.9	164.2 134.6	165.0 135.3	165.9 136.0	166.8 136.7	0
11	148.9 135.0	149.7 135.6	150.4 136.3	151.1 137.0	151.9 137.7	152.6 138.3	153.4 139.0	154.1 139.7	154.9 140.4	155.7 141.1	156.5 141.8	157.3 142.5	158.1 143.2	158.9 143.9	159.7 144.6	0
12	142.1 142.1	142.8 142.8	143.5 143.5	144.2 144.2	145.0 145.0	145.7 145.7	146.4 146.4	147.1 147.1	147.8 147.8	148.5 148.5	149.2 149.2	149.9 149.9	150.6 150.6	151.3 151.3	152.0 152.0	0
13	201.0 03.5	202.0 03.5	203.0 03.5	204.0 03.6	205.0 03.6	206.0 03.6	207.0 03.6	208.0 03.6	209.0 03.6	210.0 03.6	211.0 03.6	212.0 03.6	213.0 03.6	214.0 03.6	215.0 03.6	59
14	200.9 07.0	201.9 07.0	202.9 07.1	203.9 07.1	204.9 07.2	205.9 07.2	206.9 07.2	207.9 07.2	208.9 07.2	209.9 07.2	210.9 07.2	211.9 07.2	212.9 07.2	213.9 07.2	214.9 07.2	58
15	200.7 10.6	201.7 10.6	202.7 10.7	203.7 10.7	204.7 10.7	205.7 10.8	206.7 10.8	207.7 10.8	208.7 10.8	209.7 10.8	210.7 10.8	211.7 10.8	212.7 10.8	213.7 10.8	214.7 10.8	57
16	200.5 14.0	201.5 14.1	202.5 14.2	203.5 14.2	204.5 14.3	205.5 14.3	206.5 14.4	207.5 14.4	208.5 14.4	209.5 14.4	210.5 14.4	211.5 14.4	212.5 14.4	213.5 14.4	214.5 14.4	56
17	200.2 17.5	201.2 17.6	202.2 17.7	203.2 17.8	204.2 17.9	205.2 18.0	206.2 18.0	207.2 18.1	208.2 18.1	209.2 18.1	210.2 18.1	211.2 18.1	212.2 18.1	213.2 18.1	214.2 18.1	55
18	199.9 21.0	200.9 21.1	201.9 21.2	202.9 21.3	203.9 21.4	204.9 21.5	205.9 21.5	206.9 21.6	207.9 21.6	208.9 21.6	209.9 21.6	210.9 21.6	211.9 21.6	212.9 21.6	213.9 21.6	54
19	199.5 24.5	200.5 24.6	201.5 24.7	202.5 24.9	203.5 25.0	204.5 25.1	205.5 25.2	206.5 25.3	207.5 25.4	208.5 25.5	209.5 25.6	210.5 25.7	211.5 25.8	212.5 25.9	213.5 26.0	53
20	199.0 28.0	200.0 28.1	201.0 28.3	202.0 28.4	203.0 28.5	204.0 28.7	205.0 28.8	206.0 28.9	207.0 29.0	208.0 29.1	209.0 29.2	210.0 29.3	211.0 29.4	212.0 29.5	213.0 29.6	52
21	198.5 31.4	199.5 31.6	200.5 31.8	201.5 31.9	202.5 32.1	203.5 32.2	204.5 32.4	205.5 32.5	206.5 32.6	207.5 32.7	208.5 32.8	209.5 32.9	210.5 33.0	211.5 33.1	212.5 33.2	51
22	197.9 34.9	198.9 35.1	199.9 35.3	200.9 35.4	201.9 35.6	202.9 35.8	203.9 35.9	204.9 36.0	205.9 36.1	206.9 36.2	207.9 36.3	208.9 36.4	209.9 36.5	210.9 36.6	211.9 36.7	50
23	197.3 38.4	198.3 38.5	199.3 38.7	200.3 38.9	201.3 39.1	202.3 39.3	203.3 39.4	204.3 39.5	205.3 39.6	206.3 39.7	207.3 39.8	208.3 39.9	209.3 40.0	210.3 40.1	211.3 40.2	49
24	196.6 41.8	197.6 42.0	198.6 42.2	199.6 42.4	200.6 42.6	201.6 42.8	202.6 42.9	203.6 43.0	204.6 43.1	205.6 43.2	206.6 43.3	207.6 43.4	208.6 43.5	209.6 43.6	210.6 43.7	48
25	195.8 45.2	196.8 45.4	197.8 45.7	198.8 45.9	199.8 46.1	200.8 46.3	201.8 46.4	202.8 46.5	203.8 46.6	204.8 46.7	205.8 46.8	206.8 46.9	207.8 47.0	208.8 47.1	209.8 47.2	47
26	195.0 48.6	196.0 48.9	197.0 49.1	198.0 49.4	199.0 49.6	200.0 49.8	201.0 50.0	202.0 50.1	203.0 50.2	204.0 50.3	205.0 50.4	206.0 50.5	207.0 50.6	208.0 50.7	209.0 50.8	46
27	194.2 52.0	195.1 52.3	196.1 52.5	197.0 52.8	198.0 53.1	199.0 53.3	200.0 53.5	201.0 53.6	202.0 53.7	203.0 53.8	204.0 53.9	205.0 54.0	206.0 54.1	207.0 54.2	208.0 54.3	45
28	193.2 55.4	194.2 55.7	195.1 56.0	196.1 56.2	197.1 56.5	198.0 56.8	199.0 57.0	200.0 57.1	201.0 57.2	202.0 57.3	203.0 57.4	204.0 57.5	205.0 57.6	206.0 57.7	207.0 57.8	44
29	192.2 58.8	193.2 59.1	194.1 59.4	195.1 59.6	196.0 59.9	197.0 60.2	198.0 60.5	199.0 60.8	200.0 61.1	201.0 61.4	202.0 61.7	203.0 62.0	204.0 62.3	205.0 62.6	206.0 62.9	43
30	191.2 62.1	192.1 62.4	193.1 62.7	194.0 63.0	195.0 63.3	196.0 63.7	197.0 64.0	198.0 64.3	199.0 64.6	200.0 64.9	201.0 65.2	202.0 65.5	203.0 65.8	204.0 66.1	205.0 66.4	42
31	190.0 65.4	191.0 65.8	191.9 66.1	192.9 66.4	193.8 66.7	194.8 67.1	195.7 67.4	196.7 67.7	197.6 68.0	198.6 68.3	199.5 68.6	200.5 68.9	201.4 69.2	202.4 69.5	203.3 69.8	41
32	188.9 68.7	189.8 69.1	190.8 69.4	191.7 69.8	192.6 70.1	193.6 70.5	194.5 70.8	195.5 71.1	196.4 71.4	197.4 71.7	198.3 72.0	199.3 72.3	200.2 72.6	201.2 72.9	202.1 73.2	40
33	187.6 72.0	188.6 72.4	189.5 72.7	190.5 73.1	191.4 73.5	192.3 73.8	193.3 74.2	194.2 74.5	195.1 74.8	196.1 75.1	197.0 75.4	198.0 75.7	198.9 76.0	199.9 76.3	200.8 76.6	39
34	186.4 75.3	187.3 75.7	188.2 76.0	189.1 76.4	190.1 76.8	191.0 77.2	191.9 77.5	192.9 77.9	193.8 78.2	194.7 78.5	195.7 78.8	196.6 79.1	197.6 79.4	198.5 79.7	199.5 80.0	38
35	185.0 78.5	185.9 78.9	186.9 79.3	187.8 79.7	188.7 80.1	189.6 80.5	190.5 80.9	191.5 81.3	192.4 81.6	193.4 81.9	194.3 82.3	195.3 82.6	196.2 82.9	197.2 83.2	198.1 83.5	37
36	183.6 81.8	184.5 82.2	185.4 82.6	186.4 83.0	187.3 83.4	188.2 83.8	189.1 84.2	190.0 84.6	191.0 84.9	191.9 85.3	192.8 85.6	193.8 85.9	194.7 86.2	195.7 86.5	196.6 86.8	36
37	182.2 84.9	183.1 85.4	184.0 85.8	184.9 86.2	185.8 86.6	186.7 87.1	187.6 87.5	188.5 87.9	189.4 88.2	190.4 88.6	191.3 88.9	192.2 89.3	193.2 89.6	194.1 89.9	195.0 90.2	35
38	180.7 88.1	181.6 88.6	182.5 89.0	183.4 89.4	184.3 89.8	185.2 90.3	186.1 90.7	187.0 91.1	187.9 91.4	188.9 91.8	189.8 92.1	190.7 92.5	191.6 92.8	192.6 93.1	193.5 93.4	34
39	179.1 91.3	180.0 91.7	180.9 92.2	181.8 92.6	182.7 93.1	183.6 93.5	184.5 93.9	185.4 94.3	186.3 94.6	187.3 95.0	188.2 95.3	189.1 95.7	190.1 96.0	191.0 96.3	191.9 96.6	33
40	177.5 94.4	178.4 94.8	179.2 95.3	180.1 95.8	181.0 96.2	181.9 96.7	182.8 97.1	183.7 97.4	184.6 97.8	185.5 98.1	186.4 98.5	187.3 98.8	188.3 99.1	189.2 99.4	190.1 99.7	32
41	175.8 97.4	176.7 97.9	177.5 98.4	178.4 98.9	179.3 99.4	180.2 99.9	181.1 100.3	182.0 100.7	182.9 101.0	183.8 101.4	184.7 101.7	185.6 102.1	186.5 102.4	187.4 102.7	188.3 103.0	31
42	174.1 100.5	174.9 101.0	175.8 101.5	176.7 102.0	177.5 102.5	178.4 103.0	179.3 103.5	180.2 104.0	181.1 104.5	182.0 105.0	182.9 105.5	183.8 106.0	184.7 106.5	185.6 107.0	186.5 107.5	30
43	172.3 103.5	173.1 104.0	174.0 104.6	174.9 105.1	175.7 105.6	176.6 106.1	177.5 106.6	178.4 107.1	179.3 107.6	180.2 108.1	181.1 108.6	182.0 109.1	182.9 109.6	183.8 110.1	184.7 110.6	29
44	170.5 106.5	171.3 107.0	172.2 107.6	173.0 108.1	173.8 108.6	174.7 109.1	175.5 109.6	176.4 110.1	177.3 110.6	178.2 111.1	179.1 111.6	180.0 112.1	180.9 112.6	181.8 113.1	182.7 113.6	28
45	168.6 109.5	169.4 110.0	170.3 110.6	171.1 111.1	171.9 111.7	172.8 112.2	173.6 112.7	174.5 113.2	175.4 113.7	176.3 114.2	177.2 114.7	178.1 115.2	179.0 115.7	179.9 116.2	180.8 116.7	27
46	166.6 112.4	167.5 113.0	168.3 113.5	169.1 114.1	170.0 114.6	170.8 115.2	171.6 115.7	172.5 116.2	173.4 116.7	174.3 117.2	175.2 117.7	176.1 118.2	177.0 118.7	177.9 119.2	178.8 119.7	26
47	164.6 115.3	165.5 115.9	166.3 116.4	167.1 117.0	167.9 117.5	168.8 118.1	169.6 118.6	170.5 119.1	171.4 119.6	172.3 120.1	173.2 120.6	174.1 121.1	175.0 121.6	175.9 122.1	176.8 122.6	25
48	162.6 118.1	163.4 118.7	164.2 119.3	165.0 119.9	165.8 120.5	166.7 121.1	167.5 121.6	168.4 122.1	169.3							

Traverse Table.

(x.)

Distance. 209		210		211		212		213		214		215		216		
Cross.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Diff. Lat.	Dep.	Cross.	
1	208.8	10.3	209.8	10.3	210.7	10.4	211.7	10.4	212.7	10.5	213.7	10.5	214.7	10.6	215.7	10.6
2	208.0	20.5	209.0	20.6	210.0	20.7	211.0	20.8	212.0	20.9	213.0	21.0	214.0	21.1	215.0	21.2
3	206.7	30.7	207.7	30.8	208.7	30.9	209.7	31.1	210.7	31.2	211.7	31.4	212.7	31.5	213.7	31.7
4	205.0	40.8	206.0	41.0	206.9	41.2	207.9	41.4	208.9	41.6	209.9	41.7	210.9	41.9	211.8	42.1
5	202.7	50.8	203.7	51.0	204.7	51.3	205.6	51.5	206.6	51.8	207.6	52.0	208.6	52.2	209.5	52.5
6	200.0	60.7	201.0	61.0	201.9	61.2	202.9	61.5	203.8	61.8	204.8	62.1	205.7	62.4	206.7	62.7
7	196.8	70.4	197.7	70.7	198.7	71.1	199.6	71.4	200.5	71.8	201.5	72.1	202.4	72.4	203.4	72.8
8	193.1	80.0	194.0	80.4	194.9	80.8	195.9	81.1	196.8	81.5	197.7	81.9	198.6	82.3	199.6	82.7
9	188.9	89.4	189.8	89.8	190.7	90.2	191.6	90.6	192.6	91.1	193.5	91.5	194.4	91.9	195.3	92.4
10	184.3	98.5	185.2	99.0	186.1	99.5	187.0	99.9	187.8	100.4	188.7	100.9	189.6	101.3	190.5	101.8
11	179.2	107.4	180.1	108.0	181.0	108.5	181.8	109.0	182.7	109.5	183.5	110.0	184.4	110.5	185.3	111.0
12	173.8	116.1	174.6	116.7	175.4	117.2	176.3	117.8	177.1	118.3	177.9	118.9	178.8	119.4	179.6	120.0
13	167.9	124.5	168.7	125.1	169.5	125.7	170.3	126.3	171.1	126.9	171.9	127.5	172.7	128.1	173.5	128.7
14	161.6	132.6	162.3	133.2	163.1	133.9	163.9	134.5	164.6	135.1	165.4	135.8	166.2	136.4	167.0	137.0
15	154.9	140.3	155.6	141.0	156.3	141.7	157.1	142.4	157.8	143.0	158.6	143.7	159.3	144.4	160.0	145.0
16	147.8	147.8	148.5	148.5	149.2	149.2	149.9	150.6	150.6	151.3	151.3	152.0	152.0	152.7	152.7	152.7
17	209.0	03.6	210.0	03.7	211.0	03.7	212.0	03.7	213.0	03.7	214.0	03.7	215.0	03.8	216.0	03.8
18	208.9	07.3	209.9	07.3	210.9	07.4	211.9	07.4	212.9	07.4	213.9	07.5	214.9	07.5	215.9	07.5
19	208.7	10.9	209.7	11.0	210.7	11.0	211.7	11.1	212.7	11.1	213.7	11.2	214.7	11.3	215.7	11.3
20	208.5	14.6	209.5	14.6	210.5	14.7	211.5	14.8	212.5	14.9	213.5	14.9	214.5	15.0	215.5	15.1
21	208.2	18.2	209.2	18.3	210.2	18.4	211.2	18.5	212.2	18.6	213.2	18.7	214.2	18.7	215.2	18.8
22	207.9	21.8	208.8	22.0	209.8	22.1	210.8	22.2	211.8	22.3	212.8	22.4	213.8	22.5	214.8	22.6
23	207.4	25.5	208.4	25.6	209.4	25.7	210.4	25.8	211.4	26.0	212.4	26.1	213.4	26.2	214.4	26.3
24	207.0	29.1	208.0	29.2	208.9	29.4	209.9	29.5	210.9	29.6	211.9	29.8	212.9	29.9	213.9	30.1
25	206.4	32.7	207.4	32.9	208.4	33.0	209.4	33.2	210.4	33.3	211.4	33.5	212.4	33.6	213.3	33.8
26	205.8	36.3	206.8	36.5	207.8	36.6	208.8	36.8	209.8	37.0	210.7	37.2	211.7	37.3	212.7	37.5
27	205.2	39.9	206.1	40.1	207.1	40.3	208.1	40.5	209.1	40.6	210.1	40.8	211.0	41.0	212.0	41.2
28	204.4	43.5	205.4	43.7	206.4	43.9	207.4	44.1	208.3	44.3	209.3	44.5	210.3	44.7	211.3	44.9
29	203.6	47.0	204.6	47.2	205.6	47.5	206.6	47.7	207.5	47.9	208.5	48.1	209.5	48.4	210.5	48.6
30	202.8	50.6	203.8	50.8	204.7	51.0	205.7	51.3	206.7	51.5	207.6	51.8	208.6	52.0	209.6	52.3
31	201.9	54.1	202.8	54.4	203.8	54.6	204.8	54.9	205.7	55.1	206.7	55.4	207.7	55.6	208.6	55.9
32	200.9	57.6	201.9	57.9	202.8	58.2	203.8	58.4	204.7	58.7	205.7	59.0	206.7	59.3	207.6	59.5
33	199.9	61.1	200.8	61.4	201.8	61.7	202.7	62.0	203.7	62.3	204.6	62.6	205.6	62.9	206.6	63.2
34	198.8	64.6	199.7	64.9	200.7	65.2	201.6	65.5	202.6	65.8	203.5	66.1	204.5	66.4	205.4	66.7
35	197.6	68.0	198.6	68.4	199.5	68.7	200.4	69.0	201.4	69.3	202.3	69.7	203.3	70.0	204.2	70.3
36	196.4	71.5	197.3	71.8	198.3	72.2	199.2	72.5	200.2	72.9	201.1	73.2	202.0	73.5	203.0	73.9
37	195.1	74.9	196.1	75.3	197.0	75.6	197.9	76.0	198.9	76.3	199.8	76.7	200.7	77.0	201.7	77.4
38	193.8	78.3	194.7	78.7	195.6	79.0	196.6	79.4	197.5	79.8	198.4	80.2	199.3	80.5	200.3	80.9
39	192.4	81.7	193.3	82.1	194.2	82.4	195.1	82.8	196.1	83.2	197.0	83.6	197.9	84.0	198.8	84.4
40	190.9	85.0	191.8	85.4	192.8	85.8	193.7	86.2	194.6	86.6	195.5	87.0	196.4	87.4	197.3	87.9
41	189.4	88.3	190.3	88.7	191.2	89.2	192.1	89.6	193.0	90.0	193.9	90.4	194.9	90.9	195.8	91.3
42	187.8	91.6	188.7	92.1	189.6	92.5	190.5	92.9	191.4	93.4	192.3	93.8	193.2	94.2	194.1	94.7
43	186.2	94.9	187.1	95.3	188.0	95.8	188.9	96.2	189.8	96.7	190.7	97.2	191.6	97.6	192.5	98.1
44	184.5	98.1	185.4	98.6	186.3	99.1	187.2	99.5	188.1	100.0	189.0	100.5	189.8	100.9	190.7	101.4
45	182.8	101.3	183.7	101.8	184.5	102.3	185.4	102.8	186.3	103.3	187.2	103.7	188.0	104.2	188.9	104.7
46	181.0	104.5	181.9	105.0	182.7	105.5	183.6	106.0	184.5	106.5	185.3	107.0	186.2	107.5	187.1	108.0
47	179.1	107.6	180.0	108.2	180.9	108.7	181.7	109.2	182.6	109.7	183.4	110.2	184.3	110.7	185.1	111.2
48	177.2	110.8	178.1	111.3	178.9	111.8	179.8	112.3	180.6	112.9	181.5	113.4	182.3	113.9	183.2	114.5
49	175.3	113.8	176.1	114.4	177.0	114.9	177.8	115.5	178.6	116.0	179.5	116.6	180.3	117.1	181.2	117.6
50	173.3	116.9	174.1	117.4	174.9	118.0	175.8	118.5	176.6	119.1	177.4	119.7	178.2	120.2	179.1	120.8
51	171.2	119.9	172.0	120.5	172.8	121.0	173.7	121.6	174.5	122.2	175.3	122.7	176.1	123.3	176.9	123.9
52	169.1	122.8	169.9	123.4	170.7	124.0	171.5	124.6	172.3	125.2	173.1	125.8	173.9	126.4	174.7	127.0
53	166.9	125.8	167.7	126.4	168.5	127.0	169.3	127.6	170.1	128.2	170.9	128.8	171.7	129.4	172.5	130.0
54	164.7	128.7	165.5	129.3	166.3	129.9	167.1	130.5	167.8	131.1	168.6	131.8	169.4	132.4	170.2	133.0
55	162.4	131.5	163.2	132.2	164.0	132.8	164.8	133.4	165.5	134.0	166.3	134.7	167.1	135.3	167.9	135.9
56	160.1	134.3	160.9	135.0	161.6	135.6	162.4	136.3	163.2	136.9	163.9	137.6	164.7	138.2	165.5	138.8
57	157.7	137.1	158.5	137.8	159.2	138.4	160.0	139.1	160.8	139.7	161.5	140.4	162.3	141.1	163.0	141.7
58	155.3	139.8	156.1	140.5	156.8	141.2	157.5	141.9	158.3	142.5	159.0	143.2	159.8	143.9	160.5	144.5
59	152.9	142.5	153.6	143.2	154.3	143.9	155.0	144.6	155.8	145.3	156.5	145.9	157.2	146.6	158.0	147.3
60	150.3	145.2	151.1	145.9	151.8	146.6	152.5	147.3	153.2	148.0	153.9	148.7	154.7	149.4	155.4	150.0
61	147.8	147.8	148.5	148.5	149.2	149.2	149.9	150.6	150.6	151.3	151.3	152.0	152.0	152.7	152.7	152.7

Traverse Table.

Distance. 217		218		219		220		221		222		223	
Crse.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	
1	216.7 10.7	217.7 10.7	218.7 10.8	219.7 10.8	220.7 10.8	221.7 10.9	222.7 10.9	223.7 10.9	224.7 10.9	225.7 10.9	226.7 10.9	227.7 10.9	
2	216.0 21.3	216.9 21.4	217.9 21.5	218.9 21.6	219.9 21.7	220.9 21.8	221.9 21.8	222.9 21.8	223.9 21.8	224.9 21.8	225.9 21.8	226.9 21.8	
3	214.6 31.8	215.6 32.0	216.6 32.1	217.6 32.3	218.6 32.4	219.6 32.6	220.6 32.6	221.6 32.6	222.6 32.6	223.6 32.6	224.6 32.6	225.6 32.6	
4	212.8 42.3	213.8 42.5	214.8 42.7	215.8 42.9	216.7 43.1	217.7 43.3	218.7 43.3	219.7 43.3	220.7 43.3	221.7 43.3	222.7 43.3	223.7 43.3	
5	210.5 52.7	211.5 53.0	212.4 53.2	213.4 53.5	214.4 53.7	215.4 53.9	216.3 54.0	217.3 54.0	218.3 54.0	219.3 54.0	220.3 54.0	221.3 54.0	
6	207.7 63.0	208.6 63.3	209.6 63.6	210.5 63.9	211.5 64.1	212.4 64.4	213.4 64.4	214.4 64.4	215.4 64.4	216.4 64.4	217.4 64.4	218.4 64.4	
7	204.3 73.1	205.3 73.4	206.2 73.8	207.1 74.1	208.1 74.4	209.0 74.8	210.0 74.8	211.0 74.8	212.0 74.8	213.0 74.8	214.0 74.8	215.0 74.8	
8	200.5 83.0	201.4 83.4	202.3 83.8	203.3 84.2	204.2 84.6	205.1 85.0	206.0 85.0	207.0 85.0	208.0 85.0	209.0 85.0	210.0 85.0	211.0 85.0	
9	196.2 92.8	197.1 93.2	198.0 93.6	198.9 94.1	199.8 94.5	200.7 94.9	201.6 94.9	202.6 94.9	203.6 94.9	204.6 94.9	205.6 94.9	206.6 94.9	
10	191.4 102.3	192.3 102.8	193.1 103.2	194.0 103.7	194.9 104.2	195.8 104.6	196.7 104.6	197.7 104.6	198.7 104.6	199.7 104.6	200.7 104.6	201.7 104.6	
11	186.1 111.6	187.0 112.1	187.8 112.6	188.7 113.1	189.6 113.6	190.4 114.1	191.3 114.1	192.3 114.1	193.3 114.1	194.3 114.1	195.3 114.1	196.3 114.1	
12	180.4 120.6	181.3 121.1	182.1 121.7	182.9 122.2	183.7 122.8	184.6 123.3	185.4 123.3	186.4 123.3	187.4 123.3	188.4 123.3	189.4 123.3	190.4 123.3	
13	174.3 129.3	175.1 129.9	175.9 130.5	176.7 131.1	177.5 131.7	178.3 132.2	179.1 132.2	180.1 132.2	181.1 132.2	182.1 132.2	183.1 132.2	184.1 132.2	
14	167.7 137.7	168.5 138.3	169.3 138.9	170.1 139.6	170.8 140.2	171.6 140.8	172.4 140.8	173.4 140.8	174.4 140.8	175.4 140.8	176.4 140.8	177.4 140.8	
15	160.8 145.7	161.5 146.4	162.3 147.1	163.0 147.7	163.7 148.4	164.5 149.1	165.2 149.1	166.2 149.1	167.2 149.1	168.2 149.1	169.2 149.1	170.2 149.1	
16	153.4 153.4	154.1 154.1	154.9 154.9	155.6 155.6	156.3 156.3	157.0 157.0	157.7 157.0	158.7 157.0	159.7 157.0	160.7 157.0	161.7 157.0	162.7 157.0	
17	217.0 03.8	218.0 03.8	219.0 03.8	220.0 03.8	221.0 03.9	222.0 03.9	223.0 03.9	224.0 03.9	225.0 03.9	226.0 03.9	227.0 03.9	228.0 03.9	
18	216.9 07.6	217.9 07.6	218.9 07.6	219.9 07.7	220.9 07.7	221.9 07.7	222.9 07.7	223.9 07.7	224.9 07.7	225.9 07.7	226.9 07.7	227.9 07.7	
19	216.7 11.4	217.7 11.4	218.7 11.5	219.7 11.5	220.7 11.6	221.7 11.6	222.7 11.6	223.7 11.6	224.7 11.6	225.7 11.6	226.7 11.6	227.7 11.6	
20	216.5 15.1	217.5 15.2	218.5 15.3	219.5 15.3	220.5 15.4	221.5 15.4	222.5 15.4	223.5 15.4	224.5 15.4	225.5 15.4	226.5 15.4	227.5 15.4	
21	216.2 18.9	217.2 19.1	218.2 19.2	219.2 19.2	220.2 19.3	221.2 19.3	222.2 19.3	223.2 19.3	224.2 19.3	225.2 19.3	226.2 19.3	227.2 19.3	
22	215.8 22.7	216.8 22.8	217.8 22.9	218.8 23.0	219.8 23.1	220.8 23.2	221.8 23.2	222.8 23.2	223.8 23.2	224.8 23.2	225.8 23.2	226.8 23.2	
23	215.4 26.4	216.4 26.6	217.4 26.7	218.4 26.8	219.4 26.9	220.4 27.0	221.4 27.0	222.4 27.0	223.4 27.0	224.4 27.0	225.4 27.0	226.4 27.0	
24	214.9 30.2	215.9 30.3	216.9 30.5	217.9 30.6	218.8 30.8	219.8 30.9	220.8 30.9	221.8 30.9	222.8 30.9	223.8 30.9	224.8 30.9	225.8 30.9	
25	214.3 33.9	215.3 34.1	216.3 34.3	217.3 34.4	218.3 34.6	219.3 34.7	220.3 34.7	221.3 34.7	222.3 34.7	223.3 34.7	224.3 34.7	225.3 34.7	
26	213.7 37.7	214.7 37.9	215.7 38.0	216.7 38.2	217.6 38.4	218.6 38.5	219.6 38.5	220.6 38.5	221.6 38.5	222.6 38.5	223.6 38.5	224.6 38.5	
27	213.0 41.4	214.0 41.6	215.0 41.8	216.0 42.0	216.9 42.2	217.9 42.4	218.9 42.4	219.9 42.4	220.9 42.4	221.9 42.4	222.9 42.4	223.9 42.4	
28	212.3 45.1	213.2 45.3	214.2 45.5	215.2 45.7	216.2 45.9	217.1 46.2	218.1 46.2	219.1 46.2	220.1 46.2	221.1 46.2	222.1 46.2	223.1 46.2	
29	211.4 48.8	212.4 49.0	213.4 49.3	214.4 49.5	215.3 49.7	216.3 49.9	217.3 49.9	218.3 49.9	219.3 49.9	220.3 49.9	221.3 49.9	222.3 49.9	
30	210.6 52.5	211.5 52.7	212.5 53.0	213.5 53.2	214.4 53.5	215.4 53.7	216.4 53.7	217.4 53.7	218.4 53.7	219.4 53.7	220.4 53.7	221.4 53.7	
31	209.6 56.2	210.6 56.4	211.5 56.7	212.5 56.9	213.5 57.2	214.4 57.5	215.4 57.5	216.4 57.5	217.4 57.5	218.4 57.5	219.4 57.5	220.4 57.5	
32	208.6 59.8	209.6 60.1	210.5 60.4	211.5 60.6	212.4 60.9	213.4 61.2	214.4 61.2	215.4 61.2	216.4 61.2	217.4 61.2	218.4 61.2	219.4 61.2	
33	207.5 63.4	208.5 63.7	209.4 64.0	210.4 64.3	211.3 64.6	212.3 64.9	213.3 64.9	214.3 64.9	215.3 64.9	216.3 64.9	217.3 64.9	218.3 64.9	
34	206.4 67.1	207.3 67.4	208.3 67.7	209.2 68.0	210.2 68.3	211.1 68.6	212.1 68.6	213.1 68.6	214.1 68.6	215.1 68.6	216.1 68.6	217.1 68.6	
35	205.2 70.6	206.1 71.0	207.1 71.3	208.0 71.6	209.0 72.0	210.9 72.3	211.9 72.3	212.9 72.3	213.9 72.3	214.9 72.3	215.9 72.3	216.9 72.3	
36	203.9 74.2	204.9 74.6	205.8 74.9	206.7 75.2	207.7 75.6	208.6 75.9	209.6 75.9	210.6 75.9	211.6 75.9	212.6 75.9	213.6 75.9	214.6 75.9	
37	202.6 77.8	203.5 78.1	204.5 78.5	205.4 78.8	206.3 79.2	207.3 79.6	208.2 79.6	209.2 79.6	210.2 79.6	211.2 79.6	212.2 79.6	213.2 79.6	
38	201.2 81.3	202.1 81.7	203.1 82.0	204.0 82.4	204.9 82.8	205.8 83.2	206.8 83.2	207.8 83.2	208.8 83.2	209.8 83.2	210.8 83.2	211.8 83.2	
39	199.7 84.8	200.7 85.2	201.6 85.6	202.5 86.0	203.4 86.4	204.4 86.7	205.3 86.7	206.3 86.7	207.3 86.7	208.3 86.7	209.3 86.7	210.3 86.7	
40	198.2 88.3	199.2 88.7	200.1 89.1	201.0 89.5	201.9 89.9	202.8 90.3	203.7 90.3	204.7 90.3	205.7 90.3	206.7 90.3	207.7 90.3	208.7 90.3	
41	196.7 91.7	197.6 92.1	198.5 92.6	199.4 93.0	200.3 93.4	201.2 93.8	202.1 93.8	203.1 93.8	204.1 93.8	205.1 93.8	206.1 93.8	207.1 93.8	
42	195.0 95.1	195.9 95.6	196.8 96.0	197.7 96.4	198.6 96.9	199.5 97.3	200.4 97.3	201.4 97.3	202.4 97.3	203.4 97.3	204.4 97.3	205.4 97.3	
43	193.3 98.5	194.2 99.0	195.1 99.4	196.0 99.9	196.9 100.3	197.8 100.8	198.7 100.8	199.7 100.8	200.7 100.8	201.7 100.8	202.7 100.8	203.7 100.8	
44	191.6 101.9	192.5 102.3	193.4 102.8	194.2 103.3	195.1 103.8	196.0 104.2	196.9 104.2	197.9 104.2	198.9 104.2	199.9 104.2	200.9 104.2	201.9 104.2	
45	189.8 105.2	190.7 105.7	191.5 106.2	192.4 106.7	193.3 107.1	194.2 107.6	195.0 107.6	195.9 107.6	196.9 107.6	197.9 107.6	198.9 107.6	199.9 107.6	
46	187.9 108.5	188.8 109.0	189.7 109.5	190.5 110.0	191.4 110.5	192.3 111.0	193.1 111.0	194.1 111.0	195.1 111.0	196.1 111.0	197.1 111.0	198.1 111.0	
47	186.0 111.8	186.9 112.3	187.7 112.8	188.6 113.3	189.4 113.8	190.3 114.3	191.1 114.3	192.1 114.3	193.1 114.3	194.1 114.3	195.1 114.3	196.1 114.3	
48	184.0 115.0	184.9 115.5	185.7 116.1	186.6 116.6	187.4 117.1	188.3 117.6	189.1 117.6	190.1 117.6	191.1 117.6	192.1 117.6	193.1 117.6	194.1 117.6	
49	182.0 118.2	182.8 118.7	183.7 119.3	184.5 119.8	185.3 120.4	186.2 120.9	187.0 120.9	188.0 120.9	189.0 120.9	190.0 120.9	191.0 120.9	192.0 120.9	
50	179.9 121.3	180.7 121.9	181.6 122.5	182.4 123.0	183.2 123.6	184.0 124.1	184.9 124.1	185.9 124.1	186.9 124.1	187.9 124.1	188.9 124.1	189.9 124.1	
51	177.8 124.5	178.6 125.0	179.4 125.6	180.2 126.2	181.0 126.8	181.9 127.3	182.7 127.3	183.7 127.3	184.7 127.3	185.7 127.3	186.7 127.3	187.7 127.3	
52	175.6 127.5	176.4 128.1	177.2 128.7	178.0 129.3	178.8 129.9	179.6 130.5	180.5 130.5	181.5 130.5	182.5 130.5	183.5 130.5	184.5 130.5	185.5 130.5	
53	173.3 130.6	174.1 131.2	174.9 131.8	175.7 132.4	176.5 133.0	177.3 133.6	178.2 133.6	179.2 133.6	180.2 133.6	181.2 133.6	182.2 133.6	183.2 133.6	
54	171.0 133.6	171.8 134.2	172.6 134.8	173.4 135.4	174.2 136.1	175.0 136.7	175.9 136.7	176.9 136.7	177.9 136.7	178.9 136.7	179.9 136.7	180.9 136.7	
55	168.6 136.6	169.4 137.2	170.2 137.8	171.0 138.5	171.7 139.1	172.5 139.7	173.4 139.7	174.4 139.7	175.4 139.7	176.4 139.7	177.4 139.7	178.4 139.7	
56	166.2 139.5	167.0 140.1	167.8 140.8	168.5 141.4	169.3 142.1	170.1 142.7	171.0 142.7	172.0 142.7	173.0 142.7	174.0 142.7	175.0 142.7	176.0 142.7	
57	163.8 142.4	164.5 143.0	165.3 143.7	166.0 144.3	166.8 145.0	167.5 145.6	168.3 145.6	169.3 145.6	170.3 145.6	171.3 145.6	172.3 145.6	173.3 145.6	
58	161.3 145.2	162.0 145.9	162.7 146.5	163.5 147.2	164.2 147.9	165.0 148.5	165.8 148.5	166.8 148.5	167.8 148.5	168.8 148.5	169.8 148.5	170.8 148.5	
59	158.7 148.0	159.4 148.7	160.2 149.4	160.9 150.0	161.6 150.7	162.4 151.4	163.1 151.4	164.1 151.4	165.1 151.4	166.1 151.4	167.1 151.4	168.1 151.4	
60	156.1 150.7	156.8 151.4	157.5 152.1	158.3 152.8	159.0 153.5	159.7 154.2	160.4 154.2	161.4 154.2	162.4 154.2	163.4 154.2	164.4 154.2	165.4 154.2	
61	153.4 153.4	154.1 154.1	154.9 154.9	155.6 155.6	156.3 156.3	157.0 157.0	157.7 157.0	158.7 157.0	159				

Traverse Table.

(x.)

225			226			227			228			229			230			231			232				
Crse.	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.	Diff.	Lat.	Dep.	Crse.
1	224.7	11.0	225.7	11.1	226.7	11.1	227.7	11.2	228.7	11.2	229.7	11.3	230.7	11.3	231.7	11.4	232.7	11.4	233.7	11.4	234.7	11.4	235.7	11.4	7
	223.9	22.1	224.9	22.2	225.9	22.2	226.9	22.3	227.9	22.4	228.9	22.5	229.9	22.6	230.9	22.7	231.9	22.7	232.9	22.7	233.9	22.7	234.9	22.7	8
	222.6	33.0	223.5	33.2	224.5	33.3	225.5	33.4	226.5	33.6	227.5	33.7	228.5	33.9	229.5	34.0	230.5	34.0	231.5	34.0	232.5	34.0	233.5	34.0	9
	220.7	43.9	221.7	44.1	222.6	44.3	223.6	44.5	224.6	44.7	225.6	44.9	226.6	45.1	227.5	45.3	228.5	45.3	229.5	45.3	230.5	45.3	231.5	45.3	10
2	218.3	54.7	219.2	54.9	220.2	55.2	221.2	55.4	222.1	55.6	223.1	55.9	224.1	56.1	225.1	56.4	226.1	56.4	227.1	56.4	228.1	56.4	229.1	56.4	11
	215.3	65.3	216.3	65.6	217.2	65.9	218.2	66.2	219.1	66.5	220.1	66.8	221.1	67.0	222.0	67.3	223.0	67.3	224.0	67.3	225.0	67.3	226.0	67.3	12
	211.8	75.8	212.8	76.1	213.7	76.5	214.7	76.8	215.6	77.1	216.5	77.5	217.5	77.8	218.4	78.2	219.4	78.2	220.4	78.2	221.4	78.2	222.4	78.2	13
	207.9	86.1	208.8	86.5	209.7	86.9	210.6	87.3	211.6	87.6	212.5	88.0	213.4	88.4	214.3	88.8	215.3	88.8	216.3	88.8	217.3	88.8	218.3	88.8	14
3	203.4	96.2	204.3	96.6	205.2	97.1	206.1	97.5	207.0	97.9	207.9	98.3	208.8	98.8	209.7	99.2	210.7	99.2	211.7	99.2	212.7	99.2	213.7	99.2	15
	198.4	106.1	199.3	106.5	200.2	107.0	201.1	107.5	202.0	107.9	202.8	108.4	203.7	108.9	204.6	109.4	205.6	109.4	206.6	109.4	207.6	109.4	208.6	109.4	16
	193.0	115.7	193.8	116.2	194.7	116.7	195.6	117.2	196.4	117.7	197.3	118.2	198.1	118.8	199.0	119.3	200.3	119.3	201.3	119.3	202.3	119.3	203.3	119.3	17
	187.1	125.0	187.9	125.6	188.7	126.1	189.6	126.7	190.4	127.2	191.2	127.8	192.1	128.3	192.9	128.9	193.9	128.9	194.9	128.9	195.9	128.9	196.9	128.9	18
4	180.7	134.0	181.5	134.6	182.3	135.2	183.1	135.8	183.9	136.4	184.7	137.0	185.5	137.6	186.3	138.2	187.3	138.2	188.3	138.2	189.3	138.2	190.3	138.2	19
	173.9	142.7	174.7	143.4	175.5	144.0	176.2	144.6	177.0	145.3	177.8	145.9	178.6	146.5	179.3	147.2	180.4	147.2	181.4	147.2	182.4	147.2	183.4	147.2	20
	166.7	151.1	167.4	151.8	168.2	152.4	168.9	153.1	169.7	153.8	170.4	154.5	171.2	155.1	171.9	155.8	172.7	155.8	173.7	155.8	174.7	155.8	175.7	155.8	21
	159.1	159.1	159.8	159.8	160.5	160.5	161.2	161.2	161.9	161.9	162.6	162.6	163.3	163.3	164.0	164.0	164.7	164.0	164.7	164.0	164.7	164.0	164.7	164.0	22
1	225.0	03.9	226.0	03.9	227.0	04.0	228.0	04.0	229.0	04.0	230.0	04.0	231.0	04.0	232.0	04.0	233.0	04.0	234.0	04.0	235.0	04.0	236.0	04.0	89°
	224.9	07.9	225.9	07.9	226.9	07.9	227.9	08.0	228.9	08.0	229.9	08.0	230.9	08.1	231.9	08.1	232.9	08.1	233.9	08.1	234.9	08.1	235.9	08.1	90°
	224.7	11.8	225.7	11.8	226.7	11.9	227.7	11.9	228.7	12.0	229.7	12.0	230.7	12.1	231.7	12.1	232.7	12.1	233.7	12.1	234.7	12.1	235.7	12.1	91°
	224.5	15.7	225.4	15.8	226.4	15.8	227.4	15.9	228.4	16.0	229.4	16.0	230.4	16.1	231.4	16.2	232.4	16.2	233.4	16.2	234.4	16.2	235.4	16.2	92°
5	224.1	19.6	225.1	19.7	226.1	19.8	227.1	19.9	228.1	20.0	229.1	20.0	230.1	20.1	231.1	20.2	232.1	20.2	233.1	20.2	234.1	20.2	235.1	20.2	93°
	223.8	23.5	224.8	23.6	225.8	23.7	226.8	23.8	227.7	23.9	228.7	24.0	229.7	24.1	230.7	24.2	231.7	24.2	232.7	24.2	233.7	24.2	234.7	24.2	94°
	223.3	27.4	224.3	27.5	225.3	27.7	226.3	27.8	227.3	27.9	228.3	28.0	229.3	28.1	230.3	28.3	231.3	28.3	232.3	28.3	233.3	28.3	234.3	28.3	95°
	222.8	31.3	223.8	31.5	224.8	31.6	225.8	31.7	226.8	31.9	227.8	32.0	228.8	32.1	229.7	32.3	230.7	32.3	231.7	32.3	232.7	32.3	233.7	32.3	96°
6	222.2	35.2	223.2	35.4	224.2	35.5	225.2	35.7	226.2	35.8	227.2	36.0	228.2	36.1	229.1	36.3	230.1	36.3	231.1	36.3	232.1	36.3	233.1	36.3	97°
	221.6	39.1	222.6	39.2	223.6	39.4	224.5	39.6	225.5	39.8	226.5	39.9	227.5	40.1	228.5	40.3	229.5	40.3	230.5	40.3	231.5	40.3	232.5	40.3	98°
	220.9	42.9	221.8	43.1	222.8	43.3	223.8	43.5	224.8	43.7	225.8	43.9	226.8	44.1	227.7	44.3	228.7	44.3	229.7	44.3	230.7	44.3	231.7	44.3	99°
	220.1	46.8	221.1	47.0	222.0	47.2	223.0	47.4	224.0	47.6	225.0	47.8	226.0	48.0	227.0	48.2	228.0	48.2	229.0	48.2	230.0	48.2	231.0	48.2	100°
7	219.2	50.6	220.2	50.8	221.2	51.1	222.2	51.3	223.1	51.5	224.1	51.7	225.1	52.0	226.1	52.2	227.1	52.2	228.1	52.2	229.1	52.2	230.1	52.2	101°
	218.3	54.4	219.3	54.7	220.3	54.9	221.2	55.2	222.2	55.4	223.2	55.6	224.1	55.9	225.1	56.1	226.1	56.1	227.1	56.1	228.1	56.1	229.1	56.1	102°
	217.3	58.2	218.3	58.5	219.3	58.8	220.2	59.0	221.2	59.3	222.1	59.5	223.1	59.8	224.1	60.0	225.1	60.0	226.1	60.0	227.1	60.0	228.1	60.0	103°
	216.3	62.0	217.2	62.3	218.2	62.6	219.2	62.8	220.1	63.1	221.1	63.4	222.1	63.7	223.0	63.9	224.0	63.9	225.0	63.9	226.0	63.9	227.0	63.9	104°
8	215.2	65.8	216.1	66.1	217.1	66.4	218.0	66.7	219.0	67.0	220.0	67.2	220.9	67.5	221.9	67.8	222.9	67.8	223.9	67.8	224.9	67.8	225.9	67.8	105°
	214.0	69.5	214.9	69.8	215.9	70.1	216.8	70.5	217.8	70.8	218.7	71.1	219.7	71.4	220.6	71.7	221.6	71.7	222.6	71.7	223.6	71.7	224.6	71.7	106°
	212.7	73.3	213.7	73.6	214.6	73.9	215.6	74.2	216.5	74.6	217.5	74.9	218.4	75.2	219.4	75.5	220.4	75.5	221.4	75.5	222.4	75.5	223.4	75.5	107°
	211.4	77.0	212.4	77.3	213.3	77.6	214.2	78.0	215.2	78.3	216.1	78.7	217.1	79.0	218.0	79.3	219.0	79.3	220.0	79.3	221.0	79.3	222.0	79.3	108°
9	210.1	80.6	211.0	81.0	211.9	81.3	212.9	81.7	213.8	82.1	214.7	82.4	215.7	82.8	216.6	83.1	217.6	83.1	218.6	83.1	219.6	83.1	220.6	83.1	109°
	208.6	84.3	209.5	84.7	210.5	85.0	211.4	85.4	212.3	85.8	213.3	86.2	214.2	86.5	215.1	86.9	216.9	86.9	217.9	86.9	218.9	86.9	219.9	86.9	110°
	207.1	87.9	208.0	88.3	209.0	88.7	209.9	89.1	210.8	89.5	211.7	89.9	212.6	90.3	213.6	90.6	214.6	90.6	215.6	90.6	216.6	90.6	217.6	90.6	111°
	205.5	91.5	206.5	91.9	207.4	92.3	208.3	92.7	209.2	93.1	210.1	93.5	211.0	94.0	211.9	94.4	212.9	94.4	213.9	94.4	214.9	94.4	215.9	94.4	112°
10	203.9	95.1	204.8	95.5	205.7	95.9	206.6	96.4	207.5	96.8	208.5	97.2	209.4	97.6	210.3	98.0	211.3	98.0	212.3	98.0	213.3	98.0	214.3	98.0	113°
	202.2	98.6	203.1	99.1	204.0	99.5	204.9	99.9	205.8	100.4	206.7	100.8	207.6	101.3	208.5	101.7	209.6	101.7	210.6	101.7	211.6	101.7	212.6	101.7	114°
	200.5	102.1	201.4	102.6	202.3	103.1	203.1	103.5	204.0	104.0	204.9	104.4	205.8	104.9	206.7	105.3	207.6	105.3	208.6	105.3	209.6	105.3	210.6	105.3	115°
	198.7	105.6	199.5	106.1	200.4	106.6	201.3	107.0	202.2	107.5	203.1	108.0	204.0	108.4	204.8	108.9	209.9	108.9	210.9	108.9	211.9	108.9	212.9	108.9	116°
11	196.8	109.1	197.7	109.6	198.5	110.1	199.4	110.5	200.3	111.0	201.2	111.5	202.0	112.0	202.9	112.5	203.9	112.5	204.9	112.5	205.9	112.5	206.9	112.5	117°
	194.9	112.5	195.7	113.0	196.6	113.5	197.5	114.0	198.3	114.5	199.2	115.0	200.1	115.5	200.9	116.0	201.9	116.0	202.9	116.0	203.9	116.0	204.9	116.0	118°
	192.9	115.9	193.7	116.4	194.6	116.9	195.4	117.4	196.3	117.9	197.1	118.5	198.0	119.0	199.8	119.5	200.8	119.5	201.8	119.5	202.8	119.5	203.8	119.5	119°
	190.8	119.2	191.7	119.8	192.5	120.3	193.4	120.8	194.2	121.4	195.1	121.9	195.9	122.4	196.7	122.9	197.9	122.9	198.9	122.9	199.9	122.9	200.9	122.9	120°
12	188.7	122.5	189.5	123.1	190.4	123.6	191.2	124.2	192.1	124.7	192.9	125.3	193.7	125.8	194.6	126.4	196.6	126.4	197.6	126.4	198.6	126.4	199.6	126.4	121°
	186.5	126.8	187.4	126.4	188.2	126.9	1																		

Traverse Table.

(x.)

Distance. 233		234		235		236		237		238		239		240	
Cross.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Dist. Lat. Dep.	Cross.
1	232.7 11.4	233.7 11.5	234.7 11.5	235.7 11.6	236.7 11.6	237.7 11.7	238.7 11.7	239.7 11.8	240.7 11.8	241.7 11.9	242.7 11.9	243.7 12.0	244.7 12.0	245.7 12.1	2
2	231.9 22.8	232.9 22.9	233.9 23.0	234.9 23.1	235.9 23.2	236.9 23.3	237.9 23.3	238.9 23.4	239.9 23.5	240.9 23.5	241.9 23.6	242.9 23.6	243.9 23.7	244.9 23.7	3
3	230.5 34.2	231.5 34.3	232.4 34.5	233.4 34.6	234.4 34.8	235.4 34.9	236.4 34.9	237.4 35.1	238.4 35.2	239.4 35.2	240.4 35.3	241.4 35.3	242.4 35.4	243.4 35.4	4
4	228.5 45.5	229.5 45.7	230.5 45.8	231.5 46.0	232.4 46.2	233.4 46.4	234.4 46.6	235.4 46.8	236.4 46.8	237.4 47.0	238.4 47.1	239.4 47.2	240.4 47.3	241.4 47.3	5
5	226.0 56.6	227.0 56.9	228.0 57.1	229.9 57.3	230.9 57.6	231.8 57.8	232.8 58.1	233.8 58.3	234.8 58.3	235.8 58.5	236.8 58.6	237.8 58.8	238.8 58.9	239.8 59.0	6
6	223.0 67.6	223.9 67.9	224.9 68.2	225.8 68.5	226.8 68.8	227.8 69.1	228.7 69.4	229.7 69.7	230.7 69.7	231.7 70.0	232.7 70.1	233.7 70.2	234.7 70.4	235.7 70.5	7
7	219.4 78.5	220.3 78.8	221.3 79.2	222.2 79.5	223.1 79.8	224.1 80.2	225.0 80.5	226.0 80.8	227.0 80.8	228.0 81.1	229.0 81.2	230.0 81.4	231.0 81.5	232.0 81.6	8
8	215.3 89.2	216.2 89.6	217.1 89.9	218.0 90.3	219.0 90.7	219.9 91.1	220.8 91.5	221.7 91.8	222.7 92.1	223.7 92.4	224.7 92.7	225.7 93.0	226.7 93.3	227.7 93.6	9
9	210.6 99.6	211.5 100.1	212.4 100.5	213.3 100.9	214.2 101.3	215.1 101.8	216.1 102.2	217.0 102.6	218.0 102.9	219.0 103.3	220.0 103.7	221.0 104.0	222.0 104.4	223.0 104.7	10
10	205.5 109.8	206.4 110.3	207.3 110.8	208.1 111.2	209.0 111.7	209.9 112.2	210.8 112.7	211.7 113.1	212.7 113.5	213.7 113.9	214.7 114.3	215.7 114.7	216.7 115.1	217.7 115.4	11
11	199.8 119.8	200.7 120.3	201.6 120.8	202.4 121.3	203.3 121.8	204.1 122.4	205.0 122.9	205.9 123.4	206.9 123.8	207.9 124.2	208.9 124.6	209.9 125.0	210.9 125.4	211.9 125.7	12
12	193.7 129.4	194.6 130.0	195.4 130.6	196.2 131.1	197.1 131.7	197.9 132.2	198.7 132.8	199.5 133.3	200.5 133.7	201.5 134.1	202.5 134.5	203.5 134.9	204.5 135.3	205.5 135.6	13
13	187.1 138.8	187.9 139.4	188.8 140.0	189.6 140.6	190.4 141.2	191.2 141.8	192.0 142.4	192.8 143.0	193.7 143.5	194.7 144.0	195.7 144.5	196.7 145.0	197.7 145.5	198.7 145.9	14
14	180.1 147.8	180.9 148.4	181.7 149.1	182.4 149.7	183.2 150.3	184.0 151.0	184.8 151.6	185.5 152.3	186.3 152.9	187.1 153.5	188.0 154.0	188.9 154.6	189.8 155.1	190.7 155.7	15
15	172.6 156.5	173.4 157.1	174.1 157.8	174.9 158.5	175.6 159.1	176.3 159.8	177.1 160.5	177.8 161.2	178.6 161.8	179.4 162.5	180.2 163.1	181.0 163.8	181.8 164.4	182.6 165.0	16
16	164.8 164.8	165.5 165.5	166.2 166.2	166.9 166.9	167.6 167.6	168.3 168.3	169.0 169.0	169.7 169.7	170.4 170.4	171.1 171.1	171.8 171.8	172.5 172.5	173.2 173.2	173.9 173.9	17
17	233.0 04.1	234.0 04.1	235.0 04.1	236.0 04.1	237.0 04.1	238.0 04.2	239.0 04.2	240.0 04.2	241.0 04.3	242.0 04.3	243.0 04.3	244.0 04.4	245.0 04.4	246.0 04.4	18
18	232.9 08.1	233.9 08.2	234.9 08.2	235.9 08.2	236.9 08.3	237.9 08.3	238.9 08.3	239.9 08.3	240.9 08.4	241.9 08.4	242.9 08.4	243.9 08.5	244.9 08.5	245.9 08.5	19
19	232.7 12.2	233.7 12.2	234.7 12.3	235.7 12.4	236.7 12.4	237.7 12.5	238.7 12.5	239.7 12.5	240.7 12.6	241.7 12.6	242.7 12.6	243.7 12.7	244.7 12.7	245.7 12.7	20
20	232.4 16.3	233.4 16.3	234.4 16.4	235.4 16.5	236.4 16.5	237.4 16.6	238.4 16.6	239.4 16.7	240.4 16.7	241.4 16.8	242.4 16.8	243.4 16.9	244.4 16.9	245.4 16.9	21
21	232.1 20.3	233.1 20.4	234.1 20.5	235.1 20.6	236.1 20.7	237.1 20.7	238.1 20.8	239.1 20.8	240.1 20.9	241.1 20.9	242.1 21.0	243.1 21.0	244.1 21.1	245.1 21.1	22
22	231.7 24.4	232.7 24.5	233.7 24.6	234.7 24.7	235.7 24.8	236.7 24.8	237.7 24.9	238.7 25.0	239.7 25.0	240.7 25.1	241.7 25.1	242.7 25.2	243.7 25.2	244.7 25.3	23
23	231.3 28.4	232.3 28.5	233.2 28.6	234.2 28.8	235.2 28.9	236.2 29.0	237.2 29.1	238.2 29.2	239.2 29.2	240.2 29.3	241.2 29.3	242.2 29.4	243.2 29.4	244.2 29.5	24
24	230.7 32.4	231.7 32.6	232.7 32.7	233.7 32.8	234.7 32.9	235.7 33.0	236.7 33.1	237.7 33.2	238.7 33.3	239.7 33.3	240.7 33.4	241.7 33.4	242.7 33.5	243.7 33.5	25
25	230.1 36.4	231.1 36.6	232.1 36.8	233.1 36.9	234.1 37.1	235.1 37.2	236.1 37.4	237.0 37.5	238.0 37.5	239.0 37.6	240.0 37.6	241.0 37.7	242.0 37.7	243.0 37.8	26
26	229.5 40.5	230.4 40.6	231.4 40.8	232.4 41.0	233.4 41.2	234.4 41.3	235.4 41.5	236.4 41.7	237.4 41.8	238.4 41.9	239.4 42.0	240.4 42.1	241.4 42.2	242.4 42.2	27
27	228.7 44.5	229.7 44.6	230.7 44.8	231.7 45.0	232.6 45.2	233.6 45.4	234.6 45.6	235.6 45.8	236.6 45.9	237.6 46.0	238.6 46.1	239.6 46.2	240.6 46.3	241.6 46.4	28
28	227.9 48.4	228.9 48.7	229.9 48.9	230.8 49.1	231.8 49.3	232.8 49.5	233.8 49.7	234.8 49.9	235.8 50.0	236.8 50.1	237.8 50.2	238.8 50.3	239.8 50.4	240.8 50.5	29
29	227.0 52.4	228.0 52.6	229.0 52.9	230.0 53.1	230.9 53.3	231.9 53.5	232.9 53.8	233.8 54.0	234.8 54.2	235.8 54.4	236.8 54.6	237.8 54.8	238.8 55.0	239.8 55.1	30
30	226.1 56.4	227.0 56.6	228.0 56.9	229.0 57.1	230.0 57.3	231.0 57.6	232.0 57.8	233.0 58.1	234.0 58.3	235.0 58.5	236.0 58.8	237.0 59.0	238.0 59.2	239.0 59.4	31
31	225.1 60.3	226.0 60.6	227.0 60.8	228.0 61.1	229.0 61.3	230.0 61.6	231.0 61.9	232.0 62.1	233.0 62.4	234.0 62.6	235.0 62.9	236.0 63.1	237.0 63.4	238.0 63.6	32
32	224.0 64.2	224.9 64.5	225.9 64.8	226.9 65.1	227.8 65.3	228.8 65.6	229.7 65.9	230.7 66.2	231.7 66.4	232.7 66.7	233.7 66.9	234.7 67.2	235.7 67.4	236.7 67.7	33
33	222.8 68.1	223.8 68.4	224.7 68.7	225.7 69.0	226.6 69.3	227.6 69.6	228.6 69.9	229.5 70.2	230.5 70.4	231.5 70.7	232.5 70.9	233.5 71.2	234.5 71.4	235.5 71.7	34
34	221.6 72.0	222.5 72.3	223.5 72.6	224.4 72.9	225.4 73.2	226.4 73.5	227.4 73.8	228.4 74.1	229.4 74.3	230.4 74.6	231.4 74.9	232.4 75.1	233.4 75.4	234.4 75.7	35
35	220.3 75.9	221.3 76.2	222.2 76.5	223.1 76.8	224.1 77.2	225.0 77.5	226.0 77.8	227.0 78.1	228.0 78.3	229.0 78.6	230.0 78.9	231.0 79.1	232.0 79.4	233.0 79.7	36
36	218.9 79.7	219.9 80.0	220.8 80.4	221.8 80.7	222.7 81.1	223.6 81.4	224.6 81.7	225.5 82.1	226.5 82.4	227.5 82.7	228.5 83.0	229.5 83.3	230.5 83.6	231.5 83.9	37
37	217.5 83.5	218.5 83.9	219.4 84.2	220.3 84.6	221.3 84.9	222.2 85.3	223.1 85.6	224.1 86.0	225.1 86.3	226.1 86.6	227.1 86.9	228.1 87.2	229.1 87.5	230.1 87.8	38
38	216.0 87.3	217.0 87.7	217.9 88.0	218.8 88.4	219.7 88.8	220.7 89.2	221.6 89.5	222.5 89.9	223.5 90.2	224.5 90.5	225.5 90.8	226.5 91.1	227.5 91.4	228.5 91.7	39
39	214.5 91.0	215.4 91.4	216.3 91.8	217.2 92.2	218.2 92.6	219.1 93.0	220.0 93.4	221.0 93.8	222.0 94.1	223.0 94.4	224.0 94.7	225.0 95.0	226.0 95.3	227.0 95.6	40
40	212.9 94.8	213.8 95.2	214.7 95.6	215.6 96.0	216.5 96.4	217.4 96.8	218.3 97.2	219.2 97.5	220.1 97.8	221.0 98.1	222.0 98.4	223.0 98.7	224.0 99.0	225.0 99.3	41
41	211.2 98.5	212.1 98.9	213.0 99.3	213.9 99.7	214.8 100.2	215.7 100.6	216.6 101.0	217.5 101.4	218.4 101.7	219.3 102.0	220.2 102.3	221.1 102.6	222.0 102.9	223.0 103.2	42
42	209.4 102.1	210.3 102.6	211.2 103.0	212.1 103.5	213.0 103.9	213.9 104.3	214.8 104.8	215.7 105.2	216.6 105.6	217.5 106.0	218.4 106.3	219.3 106.6	220.2 106.9	221.1 107.2	43
43	207.6 105.8	208.5 106.2	209.4 106.7	210.3 107.1	211.2 107.6	212.1 108.0	213.0 108.5	213.9 108.9	214.8 109.3	215.7 109.7	216.6 110.1	217.5 110.5	218.4 110.8	219.3 111.2	44
44	205.7 109.4	206.6 109.9	207.5 110.3	208.4 110.8	209.3 111.3	210.1 111.7	211.0 112.2	211.9 112.6	212.8 113.0	213.7 113.4	214.6 113.8	215.5 114.2	216.4 114.5	217.3 114.9	45
45	203.8 113.0	204.7 113.4	205.5 113.9	206.4 114.4	207.3 114.9	208.2 115.4	209.0 115.9	209.9 116.4	210.8 116.8	211.7 117.2	212.6 117.6	213.5 118.0	214.4 118.4	215.3 118.7	46
46	201.8 116.5	202.6 117.0	203.5 117.5	204.4 118.0	205.2 118.5	206.1 119.0	207.0 119.5	207.9 120.0	208.8 120.4	209.7 120.8	210.6 121.2	211.5 121.6	212.4 122.0	213.3 122.4	47
47	199.7 120.0	200.6 120.5	201.4 121.0	202.3 121.5	203.1 122.0	204.0 122.6	204.9 123.1	205.7 123.5	206.6 123.9	207.5 124.3	208.4 124.7	209.3 125.1	210.2 125.5	211.1 125.9	48
48	197.6 123.5	198.4 124.0	199.3 124.5	200.1 125.1	201.0 125.6	201.8 126.1	202.7 126.6	203.5 127.0	204.4 127.4	205.3 127.8	206.2 128.2	207.1 128.6	208.0 129.0	208.9 129.4	49
49	195.4 126.9	196.2 127.4	197.1 128.0	197.9 128.5	198.8 129.1	199.6 129.6	200.4 130.2	201.3 130.7	202.2 131.1	203.1 131.5	204.0 131.9	204.9 132.3	205.8 132.7	206.7 133.1	50
50	193.2 130.3	194.0 130.9	194.8 131.4	195.7 132.0	196.5 132.5	197.3 133.1	198.2 133.6	199.0 134.2	199.9 134.7	200.8 135.1	201.7 135.5	202.6 135.9	203.5 136.3	204.4 136.7	51
51	190.9 133.6	191.7 134.2	192.5 134.8	193.3 135.4	194.1 135.9	195.0 136.5	195.8 137.1	196.6 137.							

(x.)

Traverse Table.

Distance. 241		242		243		244		245		246		247		248		Crs.
Dist.	Diff. Lat. Dep.	Dist.	Diff. Lat. Dep.	Dist.	Diff. Lat. Dep.	Dist.	Diff. Lat. Dep.	Dist.	Diff. Lat. Dep.	Dist.	Diff. Lat. Dep.	Dist.	Diff. Lat. Dep.	Dist.	Diff. Lat. Dep.	
1	240.7 11.8	241.7 11.9	242.7 11.9	243.7 12.0	244.7 12.0	245.7 12.1	246.7 12.1	247.7 12.2	248.7 12.2	249.7 12.3	250.7 12.3	251.7 12.4	252.7 12.4	253.7 12.5	254.7 12.5	7
2	239.8 23.6	240.8 23.7	241.8 23.8	242.8 23.9	243.8 24.0	244.8 24.1	245.8 24.2	246.8 24.3	247.8 24.3	248.8 24.4	249.8 24.5	250.8 24.6	251.8 24.7	252.8 24.8	253.8 24.9	8
3	238.4 35.4	239.4 35.5	240.4 35.7	241.4 35.8	242.3 35.9	243.3 36.1	244.3 36.2	245.3 36.4	246.3 36.5	247.3 36.7	248.3 36.8	249.3 37.0	250.3 37.1	251.3 37.3	252.3 37.4	9
4	236.4 47.0	237.3 47.2	238.3 47.4	239.3 47.6	240.3 47.8	241.3 48.0	242.3 48.2	243.2 48.4	244.2 48.6	245.2 48.9	246.2 49.1	247.2 49.3	248.2 49.6	249.2 49.8	250.2 50.1	10
5	233.8 58.6	234.7 58.8	235.7 59.0	236.7 59.3	237.7 59.5	238.6 59.8	239.6 60.0	240.6 60.3	241.6 60.6	242.6 61.0	243.6 61.3	244.6 61.7	245.6 62.1	246.6 62.5	247.6 63.0	11
6	230.6 70.0	231.6 70.2	232.5 70.5	233.5 70.8	234.5 71.1	235.4 71.4	236.4 71.7	237.3 72.0	238.3 72.4	239.3 72.8	240.3 73.3	241.3 73.8	242.3 74.3	243.3 74.9	244.3 75.5	12
7	226.9 81.2	227.8 81.5	228.8 81.9	229.7 82.2	230.7 82.5	231.6 82.9	232.6 83.2	233.5 83.5	234.5 83.9	235.5 84.4	236.5 84.9	237.5 85.5	238.5 86.1	239.5 86.8	240.5 87.5	13
8	222.7 92.2	223.6 92.6	224.5 93.0	225.4 93.4	226.4 93.8	227.3 94.1	228.2 94.5	229.1 94.9	230.1 95.4	231.1 95.9	232.1 96.5	233.1 97.1	234.1 97.8	235.1 98.5	236.1 99.3	14
9	217.9 103.0	218.8 103.5	219.7 103.9	220.6 104.3	221.5 104.8	222.4 105.2	223.3 105.6	224.2 106.0	225.2 106.5	226.1 107.1	227.1 107.7	228.1 108.3	229.1 109.0	230.1 109.7	231.1 110.5	15
10	212.5 113.6	213.4 114.1	214.3 114.6	215.2 115.0	216.1 115.5	217.0 116.0	217.9 116.4	218.7 116.9	219.6 117.5	220.5 118.1	221.4 118.7	222.3 119.4	223.2 120.1	224.1 120.9	225.0 121.7	16
11	206.7 123.9	207.6 124.4	208.4 124.9	209.3 125.4	210.1 125.9	211.0 126.5	211.9 127.0	212.7 127.5	213.6 128.1	214.5 128.8	215.4 129.5	216.3 130.2	217.2 131.0	218.1 131.8	219.0 132.6	17
12	200.4 133.9	201.2 134.4	202.0 135.0	202.9 135.6	203.7 136.1	204.5 136.7	205.4 137.2	206.2 137.8	207.1 138.5	208.0 139.2	208.9 140.0	209.8 140.8	210.7 141.6	211.6 142.5	212.5 143.3	18
13	193.6 143.6	194.4 144.2	195.2 144.8	196.0 145.4	196.8 146.0	197.6 146.5	198.4 147.1	199.2 147.7	200.0 148.4	200.8 149.1	201.6 149.8	202.4 150.6	203.2 151.4	204.0 152.2	204.8 153.0	19
14	186.3 152.9	187.1 153.5	187.8 154.2	188.6 154.8	189.4 155.4	190.2 156.1	191.0 156.7	191.7 157.3	192.5 158.0	193.3 158.8	194.1 159.5	194.9 160.3	195.7 161.1	196.5 161.9	197.3 162.7	20
15	178.6 161.8	179.3 162.5	180.0 163.2	180.8 163.8	181.5 164.5	182.3 165.2	183.0 165.9	183.8 166.5	184.5 167.3	185.3 168.1	186.1 168.9	186.9 169.7	187.7 170.5	188.5 171.3	189.3 172.1	21
16	170.4 170.4	171.1 171.1	171.8 171.8	172.5 172.5	173.2 173.2	173.9 173.9	174.7 174.7	175.4 175.4	176.1 176.1	176.8 176.8	177.5 177.5	178.2 178.2	178.9 178.9	179.6 179.6	180.3 180.3	22
17	241.0 04.2	242.0 04.2	243.0 04.2	244.0 04.3	245.0 04.3	246.0 04.3	247.0 04.3	248.0 04.3	249.0 04.3	250.0 04.3	251.0 04.3	252.0 04.3	253.0 04.3	254.0 04.3	255.0 04.3	23
18	240.9 08.4	241.9 08.4	242.9 08.5	243.9 08.5	244.9 08.6	245.9 08.6	246.8 08.6	247.8 08.7	248.8 08.7	249.8 08.7	250.8 08.7	251.8 08.7	252.8 08.7	253.8 08.7	254.8 08.7	24
19	240.7 12.6	241.7 12.7	242.7 12.7	243.7 12.8	244.7 12.8	245.7 12.9	246.7 12.9	247.7 12.9	248.7 12.9	249.7 12.9	250.7 12.9	251.7 12.9	252.7 12.9	253.7 12.9	254.7 12.9	25
20	240.4 16.8	241.4 16.9	242.4 17.0	243.4 17.0	244.4 17.1	245.4 17.2	246.4 17.2	247.4 17.3	248.4 17.3	249.4 17.3	250.4 17.3	251.4 17.3	252.4 17.3	253.4 17.3	254.4 17.3	26
21	240.1 21.0	241.1 21.1	242.1 21.2	243.1 21.3	244.1 21.4	245.1 21.4	246.1 21.5	247.1 21.5	248.1 21.5	249.1 21.5	250.1 21.5	251.1 21.5	252.1 21.5	253.1 21.5	254.1 21.5	27
22	239.7 25.2	240.7 25.3	241.7 25.4	242.7 25.5	243.7 25.5	244.7 25.6	245.7 25.7	246.7 25.8	247.7 25.8	248.7 25.8	249.7 25.8	250.7 25.8	251.7 25.8	252.7 25.8	253.7 25.8	28
23	239.2 29.4	240.2 29.5	241.2 29.6	242.2 29.7	243.2 29.9	244.2 30.0	245.2 30.1	246.2 30.2	247.2 30.3	248.2 30.4	249.2 30.5	250.2 30.6	251.2 30.7	252.2 30.8	253.2 30.9	29
24	238.7 33.5	239.6 33.7	240.6 33.8	241.6 34.0	242.6 34.1	243.6 34.2	244.6 34.4	245.6 34.5	246.6 34.6	247.6 34.7	248.6 34.8	249.6 34.9	250.6 35.0	251.6 35.1	252.6 35.2	30
25	238.0 37.7	239.0 37.9	240.0 38.0	241.0 38.2	242.0 38.3	243.0 38.5	244.0 38.6	245.0 38.8	246.0 38.9	247.0 39.0	248.0 39.1	249.0 39.2	250.0 39.3	251.0 39.4	252.0 39.5	31
26	237.3 41.8	238.3 42.0	239.3 42.2	240.3 42.4	241.3 42.5	242.3 42.7	243.3 42.8	244.3 42.9	245.3 43.0	246.3 43.1	247.3 43.2	248.3 43.3	249.3 43.4	250.3 43.5	251.3 43.6	32
27	236.6 46.0	237.6 46.2	238.5 46.4	239.5 46.6	240.5 46.7	241.5 46.9	242.5 47.1	243.4 47.3	244.4 47.4	245.4 47.5	246.4 47.6	247.4 47.7	248.4 47.8	249.4 47.9	250.4 48.0	33
28	235.7 50.1	236.7 50.3	237.7 50.5	238.7 50.7	239.6 50.9	240.6 51.1	241.6 51.4	242.6 51.6	243.6 51.8	244.6 52.0	245.6 52.2	246.6 52.4	247.6 52.6	248.6 52.8	249.6 53.0	34
29	234.8 54.2	235.8 54.4	236.8 54.7	237.7 54.9	238.7 55.1	239.7 55.3	240.7 55.6	241.6 55.8	242.6 56.0	243.6 56.2	244.6 56.5	245.6 56.7	246.6 57.0	247.6 57.2	248.6 57.5	35
30	233.8 58.3	234.8 58.5	235.8 58.8	236.8 59.0	237.7 59.3	238.7 59.5	239.7 59.8	240.6 60.0	241.6 60.3	242.6 60.6	243.6 60.9	244.6 61.2	245.6 61.5	246.6 61.8	247.6 62.1	36
31	232.8 62.4	233.8 62.6	234.7 62.9	235.7 63.2	236.7 63.4	237.6 63.7	238.6 63.9	239.5 64.2	240.5 64.5	241.5 64.8	242.5 65.1	243.5 65.4	244.5 65.7	245.5 66.0	246.5 66.3	37
32	231.7 66.4	232.6 66.6	233.6 66.7	234.5 67.0	235.5 67.3	236.5 67.5	237.4 67.8	238.4 68.1	239.4 68.4	240.4 68.7	241.4 69.0	242.4 69.3	243.4 69.6	244.4 69.9	245.4 70.2	38
33	230.5 70.5	231.4 70.8	232.4 71.0	233.3 71.3	234.3 71.6	235.3 71.9	236.2 72.2	237.2 72.5	238.2 72.8	239.2 73.1	240.2 73.4	241.2 73.7	242.2 74.0	243.2 74.3	244.2 74.6	39
34	229.2 74.5	230.2 74.8	231.1 75.1	232.1 75.4	233.0 75.7	234.0 76.0	235.0 76.3	236.0 76.6	237.0 76.9	238.0 77.2	239.0 77.5	240.0 77.8	241.0 78.1	242.0 78.4	243.0 78.7	40
35	227.9 78.5	228.8 78.8	229.8 79.1	230.7 79.4	231.7 79.8	232.6 80.1	233.5 80.4	234.5 80.7	235.5 81.0	236.5 81.3	237.5 81.6	238.5 81.9	239.5 82.2	240.5 82.5	241.5 82.8	41
36	226.5 82.4	227.4 82.8	228.3 83.1	229.3 83.5	230.2 83.8	231.2 84.1	232.1 84.5	233.0 84.8	234.0 85.1	235.0 85.4	236.0 85.7	237.0 86.0	238.0 86.3	239.0 86.6	240.0 86.9	42
37	225.0 86.4	225.9 86.7	226.9 87.1	227.8 87.4	228.7 87.8	229.7 88.2	230.6 88.5	231.5 88.9	232.5 89.2	233.5 89.5	234.5 89.8	235.5 90.1	236.5 90.4	237.5 90.7	238.5 91.0	43
38	223.5 90.3	224.4 90.7	225.3 91.0	226.2 91.4	227.2 91.8	228.1 92.2	229.0 92.5	230.0 92.8	231.0 93.1	232.0 93.4	233.0 93.7	234.0 94.0	235.0 94.3	236.0 94.6	237.0 94.9	44
39	221.8 94.2	222.8 94.6	223.7 94.9	224.6 95.3	225.5 95.7	226.4 96.1	227.4 96.5	228.3 96.9	229.3 97.2	230.3 97.5	231.3 97.8	232.3 98.1	233.3 98.4	234.3 98.7	235.3 99.0	45
40	220.2 98.0	221.1 98.4	222.0 98.8	222.9 99.2	223.8 99.7	224.7 100.1	225.6 100.5	226.6 100.9	227.6 101.3	228.6 101.7	229.6 102.1	230.6 102.5	231.6 102.9	232.6 103.3	233.6 103.7	46
41	218.4 101.9	219.3 102.3	220.2 102.7	221.1 103.1	222.0 103.5	223.0 104.0	224.0 104.4	225.0 104.8	226.0 105.2	227.0 105.6	228.0 106.0	229.0 106.4	230.0 106.8	231.0 107.2	232.0 107.6	47
42	216.6 105.6	217.5 106.1	218.4 106.5	219.3 107.0	220.2 107.4	221.1 107.8	222.0 108.3	223.0 108.7	224.0 109.1	225.0 109.5	226.0 109.9	227.0 110.3	228.0 110.7	229.0 111.1	230.0 111.5	48
43	214.7 109.4	215.6 109.9	216.5 110.3	217.4 110.8	218.3 111.2	219.2 111.7	220.1 112.1	221.0 112.6	222.0 113.0	223.0 113.4	224.0 113.8	225.0 114.2	226.0 114.6	227.0 115.0	228.0 115.4	49
44	212.8 113.1	213.7 113.6	214.6 114.1	215.5 114.6	216.3 115.0	217.2 115.5	218.1 116.0	219.0 116.4	220.0 116.8	221.0 117.2	222.0 117.6	223.0 118.0	224.0 118.4	225.0 118.8	226.0 119.2	50
45	210.8 116.8	211.7 117.3	212.5 117.8	213.4 118.3	214.3 118.8	215.2 119.3	216.1 119.7	217.0 120.2	218.0 120.6	219.0 121.0	220.0 121.4	221.0 121.8	222.0 122.2	223.0 122.6	224.0 123.0	51
46	208.7 120.5	209.6 121.0	210.4 121.5	211.3 122.0	212.2 122.5	213.0 123.0	214.0 123.4	215.0 123.8	216.0 124.2	217.0 124.6	218.0 125.0	219.0 125.4	220.0 125.8	221.0 126.2	222.0 126.6	52
47	206.6 124.1	207.4 124.6	208.3 125.2	209.1 125.7	210.0 126.2	210.9 126.7	211.7 127.2	212.6 127.6	213.5 128.0	214.4 128.4	215.3 128.8	216.2 129.2	217.1 129.6	218.0 130.0	219.0 130.4	53
48	204.4 127.7	205.2 128.2	206.1 128.8	206.9 129.3	207.8 129.8	208.6 130.4	209.5 130.9	210.4								

Traverse Table.

(x.)

Distance. 249		250		251		252		253		254		255		256	
Cross.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Dist.
1	248.7 12.2	249.7 12.3	250.7 12.3	251.7 12.4	252.7 12.4	253.7 12.5	254.7 12.5	255.7 12.6	256.7 12.6	257.7 12.7	258.7 12.7	259.7 12.8	260.7 12.8	261.7 12.9	71
2	247.8 24.4	248.8 24.5	249.8 24.6	250.8 24.7	251.8 24.8	252.8 24.9	253.8 25.0	254.8 25.1	255.8 25.2	256.8 25.3	257.8 25.4	258.8 25.5	259.8 25.6	260.8 25.7	72
3	246.3 36.5	247.3 36.7	248.3 36.8	249.3 36.9	250.3 37.0	251.3 37.1	252.3 37.2	253.3 37.3	254.3 37.4	255.3 37.5	256.3 37.6	257.3 37.7	258.3 37.8	259.3 37.9	73
4	244.2 48.6	245.2 48.8	246.2 49.0	247.2 49.2	248.1 49.4	249.1 49.6	250.1 49.7	251.1 49.9	252.1 50.0	253.1 50.1	254.1 50.2	255.1 50.3	256.1 50.4	257.1 50.5	74
5	241.5 60.5	242.5 60.7	243.5 61.0	244.5 61.2	245.4 61.5	246.4 61.7	247.4 62.0	248.3 62.2	249.3 62.4	250.3 62.6	251.3 62.8	252.3 63.0	253.3 63.2	254.3 63.4	75
6	238.3 72.3	239.2 72.6	240.2 72.9	241.2 73.1	242.1 73.4	243.1 73.7	244.0 74.0	245.0 74.3	246.0 74.6	247.0 74.9	248.0 75.2	249.0 75.5	250.0 75.8	251.0 76.1	76
7	234.4 83.9	235.4 84.2	236.3 84.6	237.3 84.9	238.2 85.2	239.1 85.6	240.1 85.9	241.0 86.2	242.0 86.5	243.0 86.8	244.0 87.1	245.0 87.4	246.0 87.7	247.0 88.0	77
8	230.1 95.3	231.0 95.7	231.9 96.1	232.8 96.4	233.7 96.8	234.7 97.2	235.6 97.6	236.5 98.0	237.5 98.4	238.4 98.8	239.4 99.2	240.4 99.6	241.4 100.0	242.4 100.4	78
9	225.1 106.5	226.0 106.9	226.9 107.3	227.8 107.8	228.7 108.2	229.6 108.6	230.5 109.0	231.4 109.5	232.3 109.9	233.2 110.3	234.1 110.7	235.0 111.1	235.9 111.5	236.8 111.9	79
10	219.6 117.4	220.5 117.8	221.4 118.3	222.2 118.8	223.1 119.3	224.0 119.7	224.9 120.2	225.8 120.7	226.7 121.1	227.6 121.6	228.5 122.0	229.4 122.5	230.3 122.9	231.2 123.4	80
11	213.6 128.0	214.4 128.5	215.3 129.0	216.1 129.5	217.0 130.1	217.9 130.6	218.7 131.1	219.6 131.6	220.5 132.1	221.4 132.6	222.3 133.1	223.2 133.6	224.1 134.1	225.0 134.6	81
12	207.0 138.3	207.9 138.9	208.7 139.4	209.5 140.0	210.4 140.6	211.2 141.1	212.0 141.7	212.9 142.2	213.8 142.7	214.7 143.2	215.6 143.7	216.5 144.2	217.4 144.7	218.3 145.2	82
13	200.0 148.3	200.8 148.9	201.6 149.5	202.4 150.1	203.2 150.7	204.0 151.3	204.8 151.9	205.6 152.5	206.4 153.1	207.2 153.7	208.0 154.3	208.8 154.9	209.6 155.5	210.4 156.1	83
14	192.5 158.0	193.2 158.6	194.0 159.2	194.8 159.9	195.6 160.5	196.3 161.1	197.1 161.8	197.9 162.4	198.7 163.0	199.5 163.7	200.3 164.3	201.1 165.0	201.9 165.6	202.7 166.3	84
15	184.5 167.2	185.2 167.9	186.0 168.6	186.7 169.2	187.5 169.9	188.2 170.6	188.9 171.2	189.7 171.9	190.4 172.6	191.2 173.3	191.9 174.0	192.7 174.7	193.4 175.4	194.2 176.1	85
16	176.1 176.1	176.8 176.8	177.5 177.5	178.2 178.2	178.9 178.9	179.6 179.6	180.3 180.3	181.0 181.0	181.7 181.7	182.4 182.4	183.1 183.1	183.8 183.8	184.5 184.5	185.2 185.2	86
17	249.0 04.3	250.0 04.4	251.0 04.4	252.0 04.4	253.0 04.4	254.0 04.4	255.0 04.5	256.0 04.5	257.0 04.5	258.0 04.6	259.0 04.6	260.0 04.6	261.0 04.7	262.0 04.7	87
18	248.8 08.7	249.8 08.7	250.8 08.8	251.8 08.8	252.8 08.8	253.8 08.9	254.8 08.9	255.8 08.9	256.8 09.0	257.8 09.0	258.8 09.1	259.8 09.1	260.8 09.2	261.8 09.2	88
19	248.7 13.0	249.7 13.1	250.7 13.1	251.7 13.2	252.7 13.2	253.7 13.3	254.7 13.3	255.7 13.4	256.7 13.4	257.7 13.5	258.7 13.5	259.7 13.6	260.7 13.6	261.7 13.7	89
20	248.4 17.4	249.4 17.4	250.4 17.5	251.4 17.6	252.4 17.6	253.4 17.7	254.4 17.7	255.4 17.8	256.4 17.8	257.4 17.9	258.4 17.9	259.4 18.0	260.4 18.0	261.4 18.1	90
21	248.1 21.7	249.0 21.8	250.0 21.9	251.0 22.0	252.0 22.1	253.0 22.1	254.0 22.2	255.0 22.2	256.0 22.3	257.0 22.3	258.0 22.4	259.0 22.4	260.0 22.5	261.0 22.5	91
22	247.6 26.0	248.6 26.1	249.6 26.2	250.6 26.3	251.6 26.4	252.6 26.4	253.6 26.5	254.6 26.5	255.6 26.6	256.6 26.6	257.6 26.7	258.6 26.7	259.6 26.8	260.6 26.8	92
23	247.1 30.3	248.1 30.5	249.1 30.6	250.1 30.7	251.1 30.8	252.1 31.0	253.1 31.1	254.1 31.2	255.1 31.2	256.1 31.3	257.1 31.3	258.1 31.4	259.1 31.4	260.1 31.5	93
24	246.6 34.7	247.6 34.8	248.6 34.9	249.6 35.1	250.6 35.2	251.5 35.3	252.5 35.3	253.5 35.4	254.5 35.5	255.5 35.5	256.5 35.6	257.5 35.6	258.5 35.7	259.5 35.7	94
25	245.9 39.0	246.9 39.1	247.9 39.3	248.9 39.4	249.9 39.6	250.9 39.7	251.9 39.7	252.9 39.8	253.9 39.9	254.9 39.9	255.9 40.0	256.9 40.0	257.9 40.1	258.9 40.1	95
26	245.2 43.2	246.2 43.4	247.2 43.6	248.2 43.8	249.2 43.9	250.1 44.1	251.1 44.1	252.1 44.3	253.1 44.3	254.1 44.4	255.1 44.5	256.1 44.5	257.1 44.6	258.1 44.6	96
27	244.4 47.5	245.4 47.7	246.4 47.9	247.4 48.1	248.4 48.3	249.3 48.5	250.3 48.5	251.3 48.7	252.3 48.7	253.3 48.8	254.3 48.9	255.3 49.0	256.3 49.0	257.3 49.1	97
28	243.6 51.8	244.5 52.0	245.5 52.2	246.5 52.4	247.5 52.6	248.4 52.8	249.4 52.8	250.4 53.0	251.4 53.0	252.4 53.1	253.4 53.2	254.4 53.3	255.4 53.3	256.4 53.4	98
29	242.6 56.0	243.6 56.2	244.6 56.5	245.6 56.7	246.5 56.9	247.5 57.1	248.5 57.4	249.4 57.6	250.4 57.7	251.4 57.8	252.4 57.9	253.4 58.0	254.4 58.1	255.4 58.1	99
30	241.6 60.2	242.6 60.5	243.5 60.7	244.5 61.0	245.5 61.2	246.5 61.4	247.4 61.7	248.4 61.9	249.4 62.0	250.4 62.2	251.4 62.3	252.4 62.4	253.4 62.5	254.4 62.6	100
31	240.5 64.4	241.5 64.7	242.4 65.0	243.4 65.2	244.4 65.5	245.3 65.7	246.3 65.8	247.3 66.0	248.3 66.1	249.3 66.2	250.3 66.3	251.3 66.4	252.3 66.5	253.3 66.6	101
32	239.4 68.6	240.4 68.9	241.3 69.2	242.3 69.5	243.2 69.7	244.2 70.0	245.1 70.3	246.1 70.6	247.1 70.8	248.1 71.0	249.1 71.2	250.1 71.4	251.1 71.6	252.1 71.8	102
33	238.1 72.8	239.1 73.1	240.0 73.4	241.0 73.7	241.9 74.0	242.9 74.3	243.9 74.6	244.8 74.8	245.8 75.0	246.8 75.2	247.8 75.4	248.8 75.6	249.8 75.8	250.8 76.0	103
34	236.8 76.9	237.8 77.3	238.7 77.6	239.7 77.9	240.6 78.2	241.6 78.5	242.5 78.8	243.5 79.1	244.5 79.4	245.5 79.7	246.5 80.0	247.5 80.3	248.5 80.6	249.5 80.9	104
35	235.4 81.1	236.4 81.4	237.3 81.7	238.3 82.0	239.2 82.4	240.2 82.7	241.1 83.0	242.1 83.3	243.1 83.6	244.1 83.9	245.1 84.2	246.1 84.5	247.1 84.8	248.1 85.1	105
36	234.0 85.2	234.9 85.5	235.9 85.8	236.8 86.2	237.7 86.5	238.7 86.9	239.6 87.2	240.6 87.6	241.5 87.9	242.5 88.3	243.5 88.6	244.5 89.0	245.5 89.3	246.5 89.7	106
37	232.5 89.2	233.4 89.6	234.3 90.0	235.3 90.3	236.2 90.7	237.1 91.0	238.1 91.4	239.0 91.7	240.0 92.1	241.0 92.4	242.0 92.8	243.0 93.1	244.0 93.5	245.0 93.8	107
38	230.9 93.3	231.8 93.7	232.7 94.0	233.7 94.4	234.6 94.8	235.5 95.2	236.4 95.5	237.4 95.9	238.3 96.2	239.3 96.6	240.3 96.9	241.3 97.3	242.3 97.6	243.3 98.0	108
39	229.2 97.3	230.1 97.7	231.0 98.1	232.0 98.5	232.9 98.9	233.8 99.2	234.7 99.6	235.6 100.0	236.6 100.4	237.5 100.7	238.5 101.1	239.5 101.5	240.5 101.8	241.5 102.2	109
40	227.5 101.3	228.4 101.7	229.3 102.1	230.2 102.5	231.1 102.9	232.0 103.3	233.0 103.7	233.9 104.1	234.9 104.5	235.9 104.9	236.9 105.3	237.9 105.7	238.9 106.1	239.9 106.5	110
41	225.7 105.2	226.6 105.7	227.5 106.1	228.4 106.5	229.3 106.9	230.2 107.3	231.1 107.8	232.0 108.2	232.9 108.6	233.9 109.0	234.9 109.4	235.9 109.8	236.9 110.2	237.9 110.6	111
42	223.8 109.2	224.7 109.6	225.6 110.0	226.5 110.5	227.4 110.9	228.3 111.3	229.2 111.8	230.1 112.2	231.0 112.6	232.0 113.0	232.9 113.4	233.9 113.8	234.9 114.2	235.9 114.6	112
43	221.9 113.0	222.8 113.5	223.6 114.0	224.5 114.4	225.4 114.9	226.3 115.3	227.2 115.8	228.1 116.2	229.0 116.6	230.0 117.0	230.9 117.4	231.9 117.8	232.9 118.2	233.9 118.6	113
44	219.9 116.9	220.7 117.4	221.6 117.8	222.5 118.3	223.4 118.8	224.3 119.2	225.2 119.7	226.0 120.2	227.0 120.6	227.9 121.0	228.9 121.4	229.9 121.8	230.9 122.2	231.9 122.6	114
45	217.8 120.7	218.7 121.2	219.5 121.7	220.4 122.2	221.3 122.7	222.2 123.1	223.0 123.6	223.9 124.1	224.8 124.5	225.8 124.9	226.8 125.3	227.8 125.7	228.8 126.1	229.8 126.5	115
46	215.6 124.5	216.5 125.0	217.4 125.5	218.2 126.0	219.1 126.5	220.0 127.0	220.8 127.5	221.7 127.9	222.6 128.3	223.5 128.7	224.4 129.1	225.3 129.5	226.2 129.9	227.1 130.3	116
47	213.4 128.2	214.3 128.8	215.1 129.3	216.0 129.8	216.9 130.3	217.7 130.8	218.6 131.3	219.4 131.8	220.3 132.2	221.2 132.6	222.1 133.0	223.0 133.4	223.9 133.8	224.8 134.2	117
48	211.2 131.9	212.0 132.5	212.9 133.0	213.7 133.5	214.6 134.1	215.4 134.6	216.3 135.1	217.1 135.5	218.0 136.0	218.9 136.4	219.8 136.8	220.7 137.2	221.6 137.6	222.5 138.0	118
49	208.8 135.6	209.7 136.2	210.5 136.7	211.3 137.2	212.2 137.8	213.0 138.3	213.9 138.9	214.7 139.4	215.6 139.8	216.5 140.3	217.4 140.7	218.3 141.1	219.2 141.5	220.1 141.9	119
50	206.4 139.2	207.3 139.8	208.1 140.4	208.9 140.9	209.7 141.5	210.6 142.0	211.4 142.6	212.2 143.1	213.1 143.6	214.0 144.0	214.9 144.5	215.8 144.9	216.7 145.3	217.6 145.7	120
51	204.0 142.8	204.8 143.4	205.6 144.0	206.4 144.5	2										

(x.)

Traverse Table.

(x.)

Distance. 265		266		267		268		269		270		271		272	
Crs.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Crs.
1	264.7 13.0	265.7 13.1	266.7 13.1	267.7 13.2	268.7 13.2	269.7 13.3	270.7 13.3	271.7 13.3	272.7 13.3	273.7 13.3	274.7 13.3	275.7 13.3	276.7 13.3	277.7 13.3	2
2	263.7 26.0	264.7 26.1	265.7 26.2	266.7 26.3	267.7 26.3	268.7 26.4	269.7 26.4	270.7 26.5	271.7 26.5	272.7 26.6	273.7 26.6	274.7 26.7	275.7 26.7	276.7 26.7	3
3	262.1 38.9	263.1 39.0	264.1 39.2	265.1 39.3	266.1 39.3	267.1 39.5	268.1 39.5	269.1 39.6	270.1 39.6	271.1 39.8	272.1 39.8	273.1 39.9	274.1 39.9	275.1 39.9	4
4	259.9 51.7	260.9 51.9	261.9 52.1	262.8 52.3	263.8 52.5	264.8 52.7	265.8 52.9	266.8 53.1	267.8 53.3	268.8 53.5	269.8 53.7	270.8 53.9	271.8 54.1	272.8 54.3	5
5	257.1 64.4	258.0 64.6	259.0 64.9	260.0 65.1	260.9 65.4	261.9 65.6	262.9 65.9	263.9 66.1	264.9 66.4	265.9 66.7	266.9 67.0	267.9 67.3	268.9 67.6	269.9 67.9	6
6	253.6 76.9	254.6 77.2	255.5 77.5	256.5 77.8	257.4 78.1	258.4 78.4	259.3 78.7	260.3 79.0	261.3 79.3	262.3 79.6	263.3 79.9	264.3 80.2	265.3 80.5	266.3 80.8	7
7	249.5 89.3	250.4 89.6	251.4 89.9	252.3 90.3	253.3 90.6	254.2 91.0	255.2 91.3	256.2 91.6	257.2 91.9	258.2 92.2	259.2 92.5	260.2 92.8	261.2 93.1	262.2 93.4	8
8	244.8 101.4	245.8 101.8	246.7 102.2	247.6 102.6	248.5 102.9	249.5 103.3	250.4 103.7	251.3 104.1	252.3 104.5	253.2 104.9	254.2 105.3	255.2 105.7	256.2 106.1	257.2 106.5	9
9	239.6 113.3	240.5 113.7	241.4 114.2	242.3 114.6	243.2 115.0	244.1 115.4	245.0 115.9	245.9 116.3	246.8 116.7	247.7 117.1	248.6 117.5	249.5 117.9	250.4 118.3	251.3 118.7	10
10	233.7 124.9	234.6 125.4	235.5 125.9	236.4 126.3	237.2 126.8	238.1 127.3	239.0 127.7	239.9 128.2	240.8 128.6	241.7 129.1	242.6 129.5	243.5 129.9	244.4 130.4	245.3 130.8	11
11	227.3 136.2	228.2 136.7	229.0 137.3	229.9 137.8	230.7 138.3	231.6 138.8	232.4 139.3	233.3 139.8	234.2 140.3	235.1 140.8	236.0 141.3	236.9 141.8	237.8 142.3	238.7 142.8	12
12	220.3 147.2	221.2 147.8	222.0 148.3	222.8 148.9	223.7 149.4	224.5 150.0	225.3 150.6	226.2 151.1	227.1 151.7	228.0 152.2	228.9 152.7	229.8 153.2	230.7 153.7	231.6 154.2	13
13	212.8 157.9	213.6 158.5	214.5 159.1	215.3 159.6	216.1 160.2	216.9 160.8	217.7 161.4	218.5 162.0	219.4 162.6	220.3 163.2	221.2 163.8	222.1 164.4	223.0 165.0	223.9 165.6	14
14	204.8 168.1	205.6 168.7	206.4 169.4	207.2 170.0	207.9 170.6	208.7 171.3	209.5 171.9	210.3 172.6	211.2 173.2	212.1 173.9	213.0 174.5	213.9 175.2	214.8 175.9	215.7 176.6	15
15	196.3 178.0	197.1 178.6	197.8 179.3	198.6 180.0	199.3 180.6	200.1 181.3	200.8 182.0	201.5 182.7	202.3 183.4	203.1 184.1	203.9 184.8	204.7 185.5	205.5 186.2	206.3 186.9	16
16	187.4 187.4	188.1 188.1	188.8 188.8	189.5 189.5	190.2 190.2	190.9 190.9	191.6 191.6	192.3 192.3	193.0 193.0	193.7 193.7	194.4 194.4	195.1 195.1	195.8 195.8	196.5 196.5	17
17	265.0 04.6	266.0 04.6	267.0 04.7	268.0 04.7	269.0 04.7	270.0 04.7	271.0 04.7	272.0 04.7	273.0 04.7	274.0 04.7	275.0 04.7	276.0 04.7	277.0 04.7	278.0 04.7	18
18	264.8 09.2	265.8 09.3	266.8 09.3	267.8 09.4	268.8 09.4	269.8 09.4	270.8 09.4	271.8 09.5	272.8 09.5	273.8 09.5	274.8 09.5	275.8 09.5	276.8 09.5	277.8 09.5	19
19	264.6 13.9	265.6 13.9	266.6 14.0	267.6 14.0	268.6 14.1	269.6 14.1	270.6 14.2	271.6 14.2	272.6 14.2	273.6 14.2	274.6 14.2	275.6 14.2	276.6 14.2	277.6 14.2	20
20	264.4 18.5	265.4 18.6	266.3 18.6	267.3 18.7	268.3 18.8	269.3 18.8	270.3 18.9	271.3 18.9	272.3 18.9	273.3 18.9	274.3 18.9	275.3 18.9	276.3 18.9	277.3 18.9	21
21	264.0 23.1	265.0 23.2	266.0 23.3	267.0 23.4	268.0 23.4	269.0 23.5	270.0 23.5	271.0 23.6	272.0 23.6	273.0 23.6	274.0 23.6	275.0 23.6	276.0 23.6	277.0 23.6	22
22	263.5 27.7	264.5 27.8	265.5 27.9	266.5 28.0	267.5 28.1	268.5 28.2	269.5 28.2	270.5 28.3	271.5 28.3	272.5 28.3	273.5 28.3	274.5 28.3	275.5 28.3	276.5 28.3	23
23	263.0 32.3	264.0 32.4	265.0 32.5	266.0 32.5	267.0 32.6	268.0 32.6	269.0 32.7	270.0 32.7	271.0 32.7	272.0 32.7	273.0 32.7	274.0 32.7	275.0 32.7	276.0 32.7	24
24	262.4 36.9	263.4 37.0	264.4 37.2	265.4 37.3	266.4 37.4	267.4 37.4	268.4 37.5	269.4 37.5	270.4 37.5	271.4 37.5	272.4 37.5	273.4 37.5	274.4 37.5	275.4 37.5	25
25	261.7 41.5	262.7 41.6	263.7 41.8	264.7 41.9	265.7 42.1	266.7 42.2	267.7 42.2	268.7 42.3	269.7 42.3	270.7 42.3	271.7 42.3	272.7 42.3	273.7 42.3	274.7 42.3	26
26	261.0 46.0	262.0 46.2	263.0 46.4	264.0 46.5	265.0 46.7	266.0 46.9	267.0 46.9	268.0 47.1	269.0 47.1	270.0 47.1	271.0 47.1	272.0 47.1	273.0 47.1	274.0 47.1	27
27	260.1 50.6	261.1 50.8	262.1 50.9	263.1 51.1	264.1 51.3	265.0 51.5	266.0 51.5	267.0 51.7	268.0 51.7	269.0 51.7	270.0 51.7	271.0 51.7	272.0 51.7	273.0 51.7	28
28	259.2 55.1	260.2 55.3	261.2 55.5	262.1 55.7	263.1 55.9	264.1 56.1	265.1 56.1	266.1 56.3	267.1 56.3	268.1 56.3	269.1 56.3	270.1 56.3	271.1 56.3	272.1 56.3	29
29	258.2 59.6	259.2 59.8	260.2 60.1	261.1 60.3	262.1 60.5	263.1 60.7	264.1 61.0	265.0 61.2	266.0 61.2	267.0 61.2	268.0 61.2	269.0 61.2	270.0 61.2	271.0 61.2	30
30	257.1 64.1	258.1 64.4	259.1 64.6	260.0 64.8	261.0 65.1	262.0 65.3	263.0 65.6	264.0 65.8	265.0 65.8	266.0 65.8	267.0 65.8	268.0 65.8	269.0 65.8	270.0 65.8	31
31	256.0 68.6	256.9 68.8	257.9 69.1	258.9 69.4	259.8 69.6	260.8 69.9	261.8 70.1	262.7 70.4	263.7 70.7	264.7 70.9	265.7 71.2	266.7 71.5	267.7 71.8	268.7 72.1	32
32	254.7 73.0	255.7 73.3	256.7 73.6	257.6 73.9	258.6 74.1	259.5 74.3	260.5 74.7	261.5 75.0	262.5 75.3	263.5 75.6	264.5 75.9	265.5 76.2	266.5 76.5	267.5 76.8	33
33	253.4 77.5	254.4 77.8	255.3 78.1	256.3 78.4	257.2 78.6	258.2 78.9	259.2 79.2	260.2 79.5	261.2 79.8	262.2 80.1	263.2 80.4	264.2 80.7	265.2 81.0	266.2 81.3	34
34	252.0 81.9	253.0 82.2	253.9 82.5	254.9 82.8	255.8 83.1	256.8 83.4	257.7 83.7	258.7 84.1	259.7 84.4	260.7 84.7	261.7 85.0	262.7 85.3	263.7 85.6	264.7 85.9	35
35	250.6 86.3	251.5 86.6	252.5 86.9	253.4 87.3	254.3 87.6	255.3 87.9	256.2 88.2	257.2 88.6	258.2 88.9	259.2 89.2	260.2 89.5	261.2 89.8	262.2 90.1	263.2 90.4	36
36	249.0 90.6	250.0 91.0	250.9 91.3	251.8 91.7	252.8 92.0	253.7 92.3	254.7 92.7	255.6 93.0	256.6 93.3	257.6 93.6	258.6 93.9	259.6 94.2	260.6 94.5	261.6 94.8	37
37	247.4 95.0	248.3 95.3	249.3 95.7	250.2 96.0	251.1 96.4	252.1 96.8	253.0 97.1	253.9 97.5	254.9 97.8	255.9 98.1	256.9 98.4	257.9 98.7	258.9 99.0	259.9 99.3	38
38	245.7 99.3	246.6 99.6	247.6 100.0	248.5 100.4	249.4 100.8	250.3 101.1	251.3 101.5	252.2 101.9	253.2 102.2	254.2 102.6	255.2 102.9	256.2 103.2	257.2 103.5	258.2 103.8	39
39	243.9 103.5	244.9 103.9	245.8 104.3	246.7 104.7	247.6 105.1	248.5 105.5	249.5 105.9	250.4 106.3	251.4 106.7	252.4 107.1	253.4 107.5	254.4 107.8	255.4 108.2	256.4 108.5	40
40	242.1 107.8	243.0 108.2	243.9 108.6	244.8 109.0	245.7 109.4	246.7 109.8	247.6 110.2	248.5 110.6	249.5 111.0	250.4 111.4	251.4 111.8	252.4 112.2	253.4 112.6	254.4 112.9	41
41	240.2 112.0	241.1 112.4	242.0 112.8	242.9 113.3	243.8 113.7	244.7 114.1	245.6 114.5	246.5 115.0	247.5 115.4	248.4 115.8	249.4 116.2	250.4 116.6	251.4 117.0	252.4 117.4	42
42	238.2 116.2	239.1 116.6	240.0 117.0	240.9 117.5	241.8 117.9	242.7 118.4	243.6 118.8	244.5 119.2	245.5 119.6	246.4 120.0	247.4 120.4	248.4 120.8	249.4 121.2	250.4 121.6	43
43	236.1 120.3	237.0 120.8	237.9 121.2	238.8 121.7	239.7 122.1	240.6 122.6	241.5 123.0	242.4 123.5	243.4 123.9	244.3 124.3	245.3 124.7	246.3 125.1	247.3 125.5	248.3 125.9	44
44	234.0 124.4	234.9 124.9	235.7 125.3	236.6 125.8	237.5 126.3	238.4 126.8	239.3 127.2	240.2 127.7	241.2 128.1	242.1 128.5	243.1 128.9	244.1 129.3	245.1 129.7	246.1 130.1	45
45	231.8 128.5	232.6 129.0	233.5 129.4	234.4 129.9	235.3 130.4	236.1 130.9	237.0 131.4	237.9 131.9	238.9 132.3	239.8 132.7	240.8 133.1	241.7 133.5	242.7 133.9	243.7 134.3	46
46	229.5 132.5	230.4 133.0	231.2 133.5	232.1 134.0	233.0 134.5	233.8 135.0	234.7 135.5	235.6 136.0	236.6 136.4	237.5 136.9	238.5 137.3	239.4 137.7	240.4 138.1	241.4 138.5	47
47	227.1 136.5	228.0 137.0	228.9 137.5	229.7 138.0	230.6 138.5	231.4 139.1	232.3 139.6	233.1 140.1	234.1 140.5	235.0 141.0	236.0 141.4	237.0 141.8	238.0 142.2	239.0 142.6	48
48	224.7 140.4	225.6 141.0	226.4 141.5	227.3 142.0	228.1 142.5	229.0 143.1	229.9 143.6	230.7 144.1	231.7 144.5	232.6 145.0	233.5 145.4	234.5 145.8	235.5 146.2	236.5 146.6	49
49	222.2 144.3	223.1 144.9	223.9 145.4	224.8 146.0	225.6 146.5	226.4 147.1	227.3 147.6	228.1 148.1	229.1 148.5	230.0 149.0	231.0 149.4	232.0 149.8	233.0 150.2	234.0 150.6	50
50	219.7 148.2	220.5 148.7	221.4 149.3	222.2 149.9	223.0 150.4	223.8 151.0	224.7 151.5	225.5 152.1	226.4 152.6	227.3 153.1	228.2 153.6	229.1 154.1	230.1 154.5	231.0 155.0	51
51	217.1 152.0	217.9 152.6	218.7 153.1	219.5 153.7											

Traverse Table.

(N)

Distance. 273		274		275		276		277		278		279		280		Crs.		
Cons.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.			
1	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
2	271.7 26.8	272.7 26.9	273.7 27.0	274.7 27.1	275.7 27.2	276.7 27.3	277.7 27.3	278.7 27.3	279.7 27.3	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
3	270.0 40.1	271.0 40.2	272.0 40.3	273.0 40.5	274.0 40.6	275.0 40.8	276.0 40.8	277.0 40.9	278.0 40.9	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
4	267.8 53.3	268.7 53.5	269.7 53.6	270.7 53.8	271.7 54.0	272.7 54.2	273.6 54.4	274.6 54.6	275.6 54.6	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
5	264.8 66.3	265.8 66.6	266.8 66.8	267.7 67.1	268.7 67.3	269.7 67.6	270.6 67.8	271.6 68.0	272.6 68.0	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
6	261.2 79.2	262.2 79.5	263.2 79.8	264.1 80.1	265.1 80.4	266.0 80.7	267.0 81.0	267.9 81.3	268.9 81.3	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
7	257.0 92.0	258.0 92.3	259.0 92.6	260.0 93.0	261.0 93.3	262.0 93.7	263.0 94.0	263.9 94.3	264.9 94.3	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
8	252.2 104.5	253.1 104.9	254.1 105.2	255.0 105.6	255.9 106.0	256.8 106.4	257.8 106.8	258.7 107.2	259.7 107.2	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
9	246.8 116.7	247.7 117.2	248.6 117.6	249.5 118.0	250.4 118.4	251.3 118.9	252.2 119.3	253.1 119.7	254.1 119.7	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
10	240.8 128.7	241.7 129.2	242.5 129.6	243.4 130.1	244.3 130.6	245.2 131.0	246.1 131.5	246.9 132.0	247.9 132.0	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
11	234.2 140.3	235.0 140.9	235.9 141.4	236.7 141.9	237.6 142.4	238.4 142.9	239.3 143.4	240.2 143.9	241.1 143.9	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
12	227.0 151.7	227.8 152.2	228.6 152.8	229.5 153.3	230.3 153.9	231.1 154.4	232.0 155.0	232.8 155.6	233.7 155.6	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
13	219.3 162.6	220.1 163.2	220.9 163.8	221.7 164.4	222.5 165.0	223.3 165.6	224.1 166.2	224.9 166.8	225.7 166.8	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
14	211.0 173.2	211.8 173.8	212.6 174.5	213.3 175.1	214.1 175.7	214.9 176.4	215.7 177.0	216.4 177.6	217.2 177.6	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
15	202.3 183.3	203.0 184.0	203.8 184.7	204.5 185.3	205.2 186.0	206.0 186.7	206.7 187.4	207.5 188.0	208.3 188.0	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
16	193.0 193.0	193.7 193.7	194.5 194.5	195.2 195.2	195.9 195.9	196.6 196.6	197.3 197.3	198.0 198.0	198.0 198.0	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
17	273.0 04.8	274.0 04.8	275.0 04.8	276.0 04.8	277.0 04.8	278.0 04.9	279.0 04.9	280.0 04.9	280.0 04.9	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
18	272.8 09.5	273.8 09.6	274.8 09.6	275.8 09.6	276.8 09.7	277.8 09.7	278.8 09.7	279.8 09.8	280.0 09.8	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
19	272.6 14.3	273.6 14.3	274.6 14.4	275.6 14.4	276.6 14.5	277.6 14.5	278.6 14.6	279.6 14.7	280.0 14.7	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
20	272.3 19.0	273.3 19.1	274.3 19.2	275.3 19.3	276.3 19.3	277.3 19.4	278.3 19.5	279.3 19.5	280.0 19.5	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
21	272.0 23.8	273.0 23.9	274.0 24.0	275.0 24.1	276.0 24.1	277.0 24.2	278.0 24.2	279.0 24.4	280.0 24.4	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
22	271.5 28.5	272.5 28.6	273.5 28.7	274.5 28.8	275.5 28.9	276.5 29.0	277.5 29.1	278.5 29.3	279.0 29.3	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
23	271.0 33.3	272.0 33.4	273.0 33.5	274.0 33.6	275.0 33.8	276.0 33.8	277.0 33.9	278.0 34.0	279.0 34.1	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
24	270.3 38.0	271.3 38.1	272.3 38.3	273.3 38.4	274.3 38.6	275.3 38.7	276.3 38.8	277.3 39.0	278.0 39.0	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
25	269.6 42.7	270.6 42.9	271.6 43.0	272.6 43.2	273.6 43.3	274.6 43.5	275.6 43.6	276.6 43.8	277.0 43.8	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
26	268.9 47.4	269.8 47.5	270.8 47.8	271.8 47.9	272.8 48.1	273.8 48.3	274.8 48.4	275.7 48.6	276.0 48.6	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
27	268.0 52.1	269.0 52.3	270.0 52.5	271.0 52.7	272.0 52.9	273.0 53.0	274.0 53.2	274.9 53.4	275.0 53.4	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
28	267.0 56.8	268.0 57.0	269.0 57.2	270.0 57.4	271.0 57.6	272.0 57.8	273.0 58.0	273.9 58.2	274.0 58.2	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
29	266.0 61.4	267.0 61.6	268.0 61.9	269.0 62.1	270.0 62.3	271.0 62.5	272.0 62.8	272.8 63.0	273.0 63.0	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
30	264.9 66.0	265.9 66.3	266.8 66.5	267.8 66.8	268.7 67.0	269.7 67.3	270.6 67.5	271.5 67.7	272.0 67.7	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
31	263.7 70.7	264.7 70.9	265.6 71.2	266.6 71.4	267.6 71.7	268.5 72.0	269.5 72.2	270.5 72.5	271.0 72.5	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
32	262.4 75.2	263.4 75.5	264.3 75.8	265.3 76.1	266.3 76.4	267.2 76.6	268.2 76.9	269.2 77.2	270.0 77.2	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
33	261.1 79.8	262.0 80.1	263.0 80.4	264.0 80.7	265.0 81.0	266.0 81.3	267.0 81.6	267.8 81.9	268.0 81.9	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
34	259.6 84.4	260.6 84.7	261.5 85.0	262.5 85.3	263.4 85.6	264.4 85.9	265.3 86.2	266.3 86.5	267.0 86.5	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
35	258.1 88.9	259.1 89.2	260.0 89.5	261.0 89.9	261.9 90.2	262.9 90.5	263.8 90.8	264.7 91.2	265.0 91.2	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
36	256.5 93.4	257.5 93.7	258.4 94.1	259.4 94.4	260.3 94.7	261.2 95.1	262.2 95.4	263.1 95.8	264.0 95.8	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
37	254.9 97.8	255.8 98.2	256.7 98.6	257.7 98.9	258.6 99.3	259.5 99.6	260.5 100.0	261.4 100.3	262.0 100.3	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
38	253.1 102.3	254.0 102.6	255.0 103.0	255.9 103.4	256.8 103.8	257.8 104.1	258.7 104.5	259.6 104.9	260.0 104.9	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
39	251.3 106.7	252.2 107.1	253.1 107.5	254.1 107.8	255.0 108.2	255.9 108.6	256.8 109.0	257.7 109.4	258.0 109.4	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
40	249.4 111.0	250.3 111.4	251.2 111.9	252.1 112.3	253.1 112.7	254.0 113.1	255.0 113.5	255.8 113.9	256.0 113.9	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
41	247.4 115.4	248.3 115.8	249.2 116.2	250.1 116.6	251.0 117.1	252.0 117.5	252.9 117.9	253.8 118.3	254.0 118.3	272.7 13.4	273.7 13.4	274.7 13.5	275.7 13.5	276.7 13.6	277.7 13.6	278.7 13.7	279.7 13.7	280.0 13.7
42	245.4 119.7	246.3 120.1	247.2 120.6	248.1 121.0	249.0 121.4	249.9 121.9	250.8 122.3											

Traverse Table.

(x)

Distances. 281		282		283		284		285		286		287		288		
Cross.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Cross.
1	280.7 13.8	281.7 13.8	282.7 13.9	283.7 13.9	284.7 14.0	285.7 14.0	286.7 14.1	287.7 14.1	288.7 14.1	289.7 14.1	290.7 14.1	291.7 14.1	292.7 14.1	293.7 14.1	294.7 14.1	1
2	279.6 27.5	280.6 27.6	281.6 27.7	282.6 27.8	283.6 27.9	284.6 28.0	285.6 28.1	286.6 28.2	287.6 28.2	288.6 28.2	289.6 28.2	290.6 28.2	291.6 28.2	292.6 28.2	293.6 28.2	2
3	278.0 41.2	278.9 41.4	279.9 41.5	280.9 41.7	281.9 41.8	282.9 42.0	283.9 42.1	284.9 42.3	285.9 42.3	286.9 42.3	287.9 42.3	288.9 42.3	289.9 42.3	290.9 42.3	291.9 42.3	3
4	275.6 54.8	276.6 55.0	277.6 55.2	278.6 55.4	279.6 55.6	280.6 55.8	281.6 56.0	282.6 56.2	283.6 56.2	284.6 56.2	285.6 56.2	286.6 56.2	287.6 56.2	288.6 56.2	289.6 56.2	4
5	272.6 68.3	273.6 68.5	274.6 68.8	275.6 69.0	276.6 69.3	277.6 69.5	278.6 69.7	279.6 70.0	280.6 70.0	281.6 70.0	282.6 70.0	283.6 70.0	284.6 70.0	285.6 70.0	286.6 70.0	5
6	268.9 81.6	269.9 81.9	270.9 82.1	271.9 82.4	272.9 82.7	273.9 83.0	274.9 83.3	275.9 83.6	276.9 83.6	277.9 83.6	278.9 83.6	279.9 83.6	280.9 83.6	281.9 83.6	282.9 83.6	6
7	264.6 94.7	265.5 95.0	266.5 95.3	267.4 95.7	268.3 96.0	269.3 96.3	270.3 96.6	271.3 97.0	272.3 97.0	273.3 97.0	274.3 97.0	275.3 97.0	276.3 97.0	277.3 97.0	278.3 97.0	7
8	259.6 107.5	260.5 107.9	261.5 108.3	262.4 108.7	263.3 109.1	264.2 109.5	265.2 109.8	266.1 110.2	267.1 110.2	268.1 110.2	269.1 110.2	270.1 110.2	271.1 110.2	272.1 110.2	273.1 110.2	8
9	254.0 120.2	254.9 120.6	255.8 121.0	256.7 121.4	257.6 121.9	258.5 122.3	259.4 122.7	260.3 123.1	261.3 123.1	262.3 123.1	263.3 123.1	264.3 123.1	265.3 123.1	266.3 123.1	267.3 123.1	9
10	247.8 132.5	248.7 132.9	249.6 133.4	250.5 133.9	251.4 134.3	252.2 134.8	253.1 135.3	254.0 135.8	255.0 135.8	256.0 135.8	257.0 135.8	258.0 135.8	259.0 135.8	260.0 135.8	261.0 135.8	10
11	241.0 144.5	241.9 145.0	242.7 145.5	243.6 146.0	244.4 146.5	245.3 147.0	246.2 147.5	247.0 148.0	248.0 148.0	249.0 148.0	250.0 148.0	251.0 148.0	252.0 148.0	253.0 148.0	254.0 148.0	11
12	233.6 156.1	234.5 156.7	235.3 157.2	236.1 157.8	237.0 158.3	237.8 158.9	238.6 159.4	239.5 160.0	240.5 160.0	241.5 160.0	242.5 160.0	243.5 160.0	244.5 160.0	245.5 160.0	246.5 160.0	12
13	225.7 167.4	226.5 168.0	227.3 168.6	228.1 169.2	228.9 169.8	229.7 170.4	230.5 171.0	231.3 171.6	232.3 171.6	233.3 171.6	234.3 171.6	235.3 171.6	236.3 171.6	237.3 171.6	238.3 171.6	13
14	217.2 178.3	218.0 178.9	218.8 179.5	219.5 180.2	220.3 180.8	221.1 181.4	221.9 182.1	222.6 182.7	223.6 182.7	224.6 182.7	225.6 182.7	226.6 182.7	227.6 182.7	228.6 182.7	229.6 182.7	14
15	208.2 188.7	208.9 189.4	209.7 190.0	210.4 190.7	211.2 191.4	211.9 192.1	212.6 192.8	213.4 193.4	214.4 193.4	215.4 193.4	216.4 193.4	217.4 193.4	218.4 193.4	219.4 193.4	220.4 193.4	15
16	198.7 198.7	199.4 199.4	200.1 200.1	200.8 200.8	201.5 201.5	202.2 202.2	202.9 202.9	203.6 203.6	204.6 203.6	205.6 203.6	206.6 203.6	207.6 203.6	208.6 203.6	209.6 203.6	210.6 203.6	16
17	281.0 04.9	282.0 04.9	283.0 04.9	284.0 05.0	285.0 05.0	286.0 05.0	287.0 05.0	288.0 05.0	289.0 05.0	290.0 05.0	291.0 05.0	292.0 05.0	293.0 05.0	294.0 05.0	295.0 05.0	17
18	280.8 09.8	281.8 09.8	282.8 09.9	283.8 09.9	284.8 09.9	285.8 10.0	286.8 10.0	287.8 10.1	288.8 10.1	289.8 10.1	290.8 10.1	291.8 10.1	292.8 10.1	293.8 10.1	294.8 10.1	18
19	280.6 14.7	281.6 14.8	282.6 14.8	283.6 14.9	284.6 14.9	285.6 15.0	286.6 15.0	287.6 15.1	288.6 15.1	289.6 15.1	290.6 15.1	291.6 15.1	292.6 15.1	293.6 15.1	294.6 15.1	19
20	280.2 19.6	281.3 19.7	282.3 19.7	283.3 19.8	284.3 19.9	285.3 20.0	286.3 20.0	287.3 20.1	288.3 20.1	289.3 20.1	290.3 20.1	291.3 20.1	292.3 20.1	293.3 20.1	294.3 20.1	20
21	279.9 24.5	280.9 24.6	281.9 24.7	282.9 24.8	283.9 24.8	284.9 24.9	285.9 25.0	286.9 25.1	287.9 25.1	288.9 25.1	289.9 25.1	290.9 25.1	291.9 25.1	292.9 25.1	293.9 25.1	21
22	279.5 29.5	280.5 29.5	281.5 29.6	282.5 29.7	283.5 29.8	284.5 29.8	285.5 29.9	286.5 30.0	287.5 30.0	288.5 30.0	289.5 30.0	290.5 30.0	291.5 30.0	292.5 30.0	293.5 30.0	22
23	278.9 34.2	279.9 34.4	280.9 34.5	281.9 34.6	282.9 34.7	283.9 34.9	284.9 35.0	285.9 35.1	286.9 35.1	287.9 35.1	288.9 35.1	289.9 35.1	290.9 35.1	291.9 35.1	292.9 35.1	23
24	278.3 39.1	279.3 39.2	280.2 39.4	281.2 39.5	282.2 39.7	283.2 39.8	284.2 39.9	285.2 40.1	286.2 40.1	287.2 40.1	288.2 40.1	289.2 40.1	290.2 40.1	291.2 40.1	292.2 40.1	24
25	277.5 44.0	278.5 44.1	279.5 44.3	280.5 44.4	281.5 44.6	282.5 44.7	283.5 44.9	284.5 45.1	285.5 45.1	286.5 45.1	287.5 45.1	288.5 45.1	289.5 45.1	290.5 45.1	291.5 45.1	25
26	276.7 48.8	277.7 49.0	278.7 49.1	279.7 49.3	280.7 49.5	281.7 49.7	282.7 49.8	283.7 49.9	284.7 49.9	285.7 49.9	286.7 49.9	287.7 49.9	288.7 49.9	289.7 49.9	290.7 49.9	26
27	275.8 53.6	276.8 53.8	277.8 54.0	278.8 54.2	279.8 54.4	280.7 54.6	281.7 54.8	282.7 55.0	283.7 55.0	284.7 55.0	285.7 55.0	286.7 55.0	287.7 55.0	288.7 55.0	289.7 55.0	27
28	274.9 58.4	275.8 58.6	276.8 58.8	277.8 59.0	278.8 59.2	279.8 59.5	280.7 59.7	281.7 59.9	282.7 59.9	283.7 59.9	284.7 59.9	285.7 59.9	286.7 59.9	287.7 59.9	288.7 59.9	28
29	273.8 63.2	274.8 63.4	275.7 63.7	276.7 63.9	277.7 64.1	278.7 64.3	279.6 64.5	280.6 64.8	281.6 64.8	282.6 64.8	283.6 64.8	284.6 64.8	285.6 64.8	286.6 64.8	287.6 64.8	29
30	272.7 68.0	273.6 68.2	274.6 68.5	275.6 68.7	276.6 68.9	277.5 69.2	278.5 69.4	279.4 69.7	280.4 69.7	281.4 69.7	282.4 69.7	283.4 69.7	284.4 69.7	285.4 69.7	286.4 69.7	30
31	271.4 72.7	272.4 73.0	273.4 73.2	274.3 73.5	275.3 73.8	276.3 74.0	277.2 74.3	278.2 74.5	279.2 74.5	280.2 74.5	281.2 74.5	282.2 74.5	283.2 74.5	284.2 74.5	285.2 74.5	31
32	270.1 77.5	271.1 77.7	272.0 78.0	273.0 78.3	274.0 78.6	275.0 78.8	276.0 79.1	277.0 79.3	278.0 79.3	279.0 79.3	280.0 79.3	281.0 79.3	282.0 79.3	283.0 79.3	284.0 79.3	32
33	268.7 82.2	269.7 82.4	270.6 82.7	271.6 83.0	272.5 83.3	273.5 83.6	274.5 83.9	275.4 84.2	276.4 84.2	277.4 84.2	278.4 84.2	279.4 84.2	280.4 84.2	281.4 84.2	282.4 84.2	33
34	267.2 86.8	268.2 87.1	269.1 87.5	270.1 87.8	271.1 88.1	272.0 88.4	273.0 88.7	274.0 89.0	275.0 89.0	276.0 89.0	277.0 89.0	278.0 89.0	279.0 89.0	280.0 89.0	281.0 89.0	34
35	265.7 91.5	266.6 91.8	267.6 92.1	268.5 92.5	269.5 92.8	270.4 93.1	271.4 93.4	272.3 93.8	273.3 93.8	274.3 93.8	275.3 93.8	276.3 93.8	277.3 93.8	278.3 93.8	279.3 93.8	35
36	264.1 96.1	265.0 96.4	265.9 96.8	266.9 97.1	267.8 97.5	268.8 97.8	269.7 98.2	270.6 98.5	271.6 98.5	272.6 98.5	273.6 98.5	274.6 98.5	275.6 98.5	276.6 98.5	277.6 98.5	36
37	262.3 100.7	263.3 101.1	264.2 101.4	265.1 101.8	266.1 102.1	267.0 102.5	267.9 102.9	268.9 103.2	269.9 103.2	270.9 103.2	271.9 103.2	272.9 103.2	273.9 103.2	274.9 103.2	275.9 103.2	37
38	260.5 105.3	261.5 105.6	262.4 106.0	263.3 106.4	264.2 106.8	265.2 107.1	266.1 107.5	267.0 107.9	268.0 107.9	269.0 107.9	270.0 107.9	271.0 107.9	272.0 107.9	273.0 107.9	274.0 107.9	38
39	258.7 109.8	259.6 110.2	260.5 110.6	261.4 111.0	262.3 111.4	263.3 111.7	264.2 112.1	265.1 112.5	266.1 112.5	267.1 112.5	268.1 112.5	269.1 112.5	270.1 112.5	271.1 112.5	272.1 112.5	39
40	256.7 114.3	257.6 114.7	258.5 115.1	259.4 115.5	260.4 115.9	261.3 116.3	262.2 116.7	263.1 117.1	264.1 117.1	265.1 117.1	266.1 117.1	267.1 117.1	268.1 117.1	269.1 117.1	270.1 117.1	40
41	254.7 118.8	255.6 119.2	256.5 119.6	257.4 120.0	258.3 120.4	259.2 120.9	260.1 121.3	261.0 121.7	262.0 121.7	263.0 121.7	264.0 121.7	265.0 121.7	266.0 121.7	267.0 121.7	268.0 121.7	41
42	252.6 123.2	253.5 123.6	254.4 124.1	255.3 124.5	256.2 124.9	257.1 125.4	258.0 125.8	258.9 126.3	259.9 126.3	260.9 126.3	261.9 126.3	262.9 126.3	263.9 126.3	264.9 126.3	265.9 126.3	42
43	250.4 127.6	251.3 128.0	252.2 128.5	253.0 128.9	253.9 129.4	254.8 129.8	255.7 130.3	256.6 130.7	257.6 130.7	258.6 130.7	259.6 130.7	260.6 130.7	261.6 130.7	262.6 130.7	263.6 130.7	43
44	248.1 131.9	249.0 132.4	249.9 132.9	250.8 133.3	251.6 133.8	252.5 134.3	253.4 134.7	254.3 135.2	255.3 135.2	256.3 135.2	257.3 135.2	258.3 135.2	259.3 135.2	260.3 135.2	261.3 135.2	44
45	245.8 136.2	246.6 136.7	247.5 137.2	248.4 137.7	249.3 138.2	250.1 138.7	251.0 139.1	251.9 139.6	252.9 139.6	253.9 139.6	254.9 139.6	255.9 139.6	256.9 139.6	257.9 139.6	258.9 139.6	45
46	243.4 140.5	244.2 141.0	245.1 141.5	246.0 142.0	246.8 142.5	247.7 143.0	248.5 143.5	249.4 144.0	250.4 144.0	251.4 144.0	252.4 144.0	253.4 144.0	254.4 144.0	255.4 144.0	256.4 144.0	46
47	240.9 144.7	241.7 145.2	242.6 145.8	243.4 146.3	244.3 146.8	245.1 147.3	246.0 147.8	246.9 148.3	247.9 148.3	248.9 148.3	249.9 148.3	250.9 148.3	251.9 148.3	252.9 148.3	253.9 148.3	47
48	238.3 148.9	239.1 149.4	240.0 150.0	240.8 150.5	241.7 151.0	242.5 1										

Traverse Table.

(x.)

Distance. 289		290		291		292		293		294		295		296		Crs.
Crs.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	Diff. Lat. Dep.	
1	288.7 14.2	289.7 14.2	290.7 14.3	291.7 14.3	292.7 14.4	293.6 14.4	294.6 14.5	295.6 14.5	296.6 14.5	297.6 14.5	298.6 14.5	299.6 14.5	300.6 14.5	301.6 14.5	302.6 14.5	79
2	287.6 28.3	288.6 28.4	289.6 28.5	290.6 28.6	291.6 28.7	292.6 28.8	293.6 28.9	294.6 29.0	295.6 29.0	296.6 29.1	297.6 29.1	298.6 29.2	299.6 29.2	300.6 29.3	301.6 29.3	80
3	286.9 42.4	287.9 42.5	288.8 42.7	289.8 42.8	290.8 43.0	291.8 43.1	292.8 43.3	293.8 43.4	294.8 43.5	295.8 43.6	296.8 43.7	297.8 43.8	298.8 43.9	299.8 44.0	300.8 44.1	81
4	283.4 56.4	284.4 56.6	285.4 56.8	286.4 57.0	287.4 57.2	288.3 57.4	289.3 57.6	290.3 57.7	291.3 57.9	292.3 58.0	293.3 58.1	294.3 58.2	295.3 58.3	296.3 58.4	297.3 58.5	82
5	280.3 70.2	281.3 70.5	282.3 70.7	283.3 71.0	284.2 71.2	285.2 71.4	286.2 71.7	287.1 71.9	288.1 72.1	289.1 72.3	290.1 72.5	291.1 72.7	292.1 72.9	293.1 73.1	294.1 73.3	83
6	276.6 83.9	277.5 84.2	278.5 84.5	279.4 84.8	280.4 85.0	281.3 85.3	282.3 85.6	283.3 85.9	284.3 86.1	285.3 86.4	286.3 86.7	287.3 87.0	288.3 87.3	289.3 87.6	290.3 87.9	84
7	272.1 97.4	273.0 97.7	274.0 98.0	274.9 98.4	275.9 98.7	276.8 99.0	277.7 99.4	278.7 99.7	279.6 100.0	280.6 100.3	281.6 100.6	282.6 100.9	283.6 101.2	284.6 101.5	285.6 101.8	85
8	267.0 110.6	267.9 111.0	268.9 111.4	269.8 111.7	270.7 112.1	271.6 112.5	272.5 112.9	273.5 113.3	274.4 113.6	275.4 114.0	276.4 114.3	277.4 114.7	278.4 115.0	279.4 115.4	280.4 115.7	86
9	261.3 123.6	262.2 124.0	263.1 124.4	264.0 124.9	264.9 125.3	265.8 125.7	266.7 126.1	267.6 126.6	268.6 127.0	269.5 127.4	270.5 127.8	271.4 128.2	272.4 128.6	273.3 129.0	274.3 129.4	87
10	254.9 136.2	255.8 136.7	256.6 137.2	257.5 137.6	258.4 138.1	259.3 138.6	260.2 139.1	261.1 139.5	262.0 139.9	263.0 140.3	264.0 140.7	265.0 141.1	266.0 141.5	267.0 141.9	268.0 142.3	88
11	247.9 148.6	248.7 149.1	249.6 149.6	250.5 150.1	251.3 150.6	252.2 151.1	253.0 151.7	253.9 152.2	254.8 152.7	255.7 153.2	256.6 153.7	257.5 154.2	258.4 154.7	259.3 155.2	260.3 155.7	89
12	240.3 160.6	241.1 161.1	242.0 161.7	242.8 162.2	243.6 162.8	244.4 163.3	245.3 163.9	246.1 164.4	247.0 164.9	247.9 165.4	248.8 165.9	249.7 166.4	250.6 166.9	251.5 167.4	252.4 167.9	90
13	232.1 172.2	232.9 172.8	233.7 173.3	234.5 173.9	235.3 174.5	236.1 175.1	236.9 175.7	237.7 176.3	238.6 176.9	239.4 177.5	240.3 178.1	241.1 178.7	242.0 179.3	242.8 179.9	243.7 180.5	91
14	223.4 183.3	224.2 184.0	224.9 184.6	225.7 185.2	226.5 185.9	227.3 186.5	228.0 187.1	228.8 187.8	229.6 188.4	230.4 189.0	231.2 189.6	232.0 190.2	232.8 190.8	233.6 191.4	234.4 192.0	92
15	214.1 194.1	214.9 194.7	215.6 195.4	216.4 196.1	217.1 196.8	217.8 197.4	218.6 198.1	219.3 198.8	220.1 199.4	220.8 200.0	221.6 200.6	222.4 201.2	223.2 201.8	224.0 202.4	224.8 203.0	93
16	204.3 204.3	205.1 205.1	205.8 205.8	206.5 206.5	207.2 207.2	207.9 207.9	208.6 208.6	209.3 209.3	210.0 210.0	210.7 210.7	211.4 211.4	212.1 212.1	212.8 212.8	213.5 213.5	214.2 214.2	94
17	289.0 05.0	290.0 05.1	291.0 05.1	292.0 05.1	293.0 05.1	294.0 05.1	295.0 05.1	296.0 05.2	297.0 05.2	298.0 05.2	299.0 05.2	300.0 05.2	301.0 05.2	302.0 05.2	303.0 05.2	95
18	288.8 10.1	289.8 10.1	290.8 10.2	291.8 10.2	292.8 10.2	293.8 10.3	294.8 10.3	295.8 10.3	296.8 10.3	297.8 10.3	298.8 10.3	299.8 10.3	300.8 10.3	301.8 10.3	302.8 10.3	96
19	288.6 15.1	289.6 15.2	290.6 15.2	291.6 15.3	292.6 15.3	293.6 15.4	294.6 15.4	295.6 15.4	296.6 15.4	297.6 15.4	298.6 15.4	299.6 15.4	300.6 15.4	301.6 15.4	302.6 15.4	97
20	288.3 20.2	289.3 20.2	290.3 20.3	291.3 20.4	292.3 20.4	293.3 20.5	294.3 20.5	295.3 20.5	296.3 20.5	297.3 20.5	298.3 20.5	299.3 20.5	300.3 20.5	301.3 20.5	302.3 20.5	98
21	287.9 25.2	288.9 25.3	289.9 25.4	290.9 25.4	291.9 25.5	292.9 25.6	293.9 25.7	294.9 25.7	295.9 25.7	296.9 25.7	297.9 25.7	298.9 25.7	299.9 25.7	300.9 25.7	301.9 25.7	99
22	287.4 30.2	288.4 30.3	289.4 30.4	290.4 30.5	291.4 30.6	292.4 30.7	293.4 30.8	294.4 30.8	295.4 30.8	296.4 30.8	297.4 30.8	298.4 30.8	299.4 30.8	300.4 30.8	301.4 30.8	100
23	286.8 35.2	287.8 35.3	288.8 35.5	289.8 35.6	290.8 35.7	291.8 35.8	292.8 35.9	293.8 36.0	294.8 36.1	295.8 36.1	296.8 36.1	297.8 36.1	298.8 36.1	299.8 36.1	300.8 36.1	101
24	286.2 40.2	287.2 40.4	288.2 40.5	289.2 40.6	290.1 40.8	291.1 40.9	292.1 41.1	293.1 41.2	294.1 41.3	295.1 41.4	296.1 41.5	297.1 41.6	298.1 41.7	299.1 41.8	300.1 41.9	102
25	285.4 45.2	286.4 45.4	287.4 45.5	288.4 45.7	289.4 45.8	290.4 46.0	291.4 46.1	292.4 46.2	293.4 46.3	294.4 46.4	295.4 46.5	296.4 46.6	297.4 46.7	298.4 46.8	299.4 46.9	103
26	284.6 50.2	285.6 50.4	286.6 50.5	287.6 50.7	288.5 50.9	289.5 51.1	290.5 51.2	291.5 51.4	292.5 51.5	293.5 51.6	294.5 51.7	295.5 51.8	296.5 51.9	297.5 52.0	298.5 52.1	104
27	283.7 55.1	284.7 55.3	285.7 55.5	286.6 55.7	287.6 55.9	288.6 56.1	289.6 56.3	290.6 56.5	291.6 56.6	292.6 56.7	293.6 56.8	294.6 56.9	295.6 57.0	296.6 57.1	297.6 57.2	105
28	282.7 60.1	283.7 60.3	284.6 60.5	285.6 60.7	286.6 60.9	287.6 61.1	288.6 61.3	289.6 61.5	290.6 61.6	291.6 61.7	292.6 61.8	293.6 61.9	294.6 62.0	295.6 62.1	296.6 62.2	106
29	281.6 65.0	282.6 65.2	283.5 65.5	284.5 65.7	285.5 65.9	286.5 66.1	287.4 66.4	288.4 66.6	289.4 66.7	290.4 66.8	291.4 66.9	292.4 67.0	293.4 67.1	294.4 67.2	295.4 67.3	107
30	280.4 69.9	281.4 70.2	282.4 70.4	283.3 70.6	284.3 70.9	285.3 71.1	286.2 71.4	287.2 71.6	288.2 71.7	289.2 71.8	290.2 71.9	291.2 72.0	292.2 72.1	293.2 72.2	294.2 72.3	108
31	279.2 74.8	280.1 75.1	281.1 75.3	282.1 75.6	283.0 75.8	284.0 76.1	284.9 76.4	285.9 76.6	286.8 76.7	287.8 76.8	288.8 76.9	289.8 77.0	290.8 77.1	291.8 77.2	292.8 77.3	109
32	277.8 79.7	278.8 79.9	279.7 80.2	280.7 80.5	281.6 80.8	282.6 81.0	283.6 81.3	284.6 81.6	285.6 81.8	286.6 82.0	287.6 82.2	288.6 82.4	289.6 82.6	290.6 82.8	291.6 83.0	110
33	276.4 84.5	277.3 84.8	278.3 85.1	279.2 85.4	280.2 85.7	281.2 86.0	282.1 86.2	283.1 86.5	284.1 86.7	285.1 86.9	286.1 87.1	287.1 87.3	288.1 87.5	289.1 87.7	290.1 87.9	111
34	274.9 89.3	275.8 89.6	276.8 89.9	277.7 90.2	278.7 90.5	279.6 90.9	280.6 91.2	281.5 91.5	282.5 91.8	283.4 92.1	284.4 92.4	285.4 92.7	286.4 93.0	287.4 93.3	288.4 93.6	112
35	273.3 94.1	274.2 94.4	275.1 94.7	276.1 95.1	277.0 95.4	278.0 95.7	278.9 95.9	279.9 96.2	280.8 96.5	281.8 96.8	282.8 97.1	283.8 97.4	284.8 97.7	285.8 98.0	286.8 98.3	113
36	271.6 98.8	272.5 99.2	273.5 99.5	274.4 99.9	275.3 100.2	276.3 100.6	277.2 100.9	278.1 101.2	279.1 101.5	280.1 101.8	281.1 102.1	282.1 102.4	283.1 102.7	284.1 103.0	285.1 103.3	114
37	269.8 103.6	270.7 103.9	271.7 104.3	272.6 104.6	273.5 105.0	274.5 105.4	275.4 105.7	276.3 106.1	277.3 106.4	278.3 106.7	279.3 107.0	280.3 107.3	281.3 107.6	282.3 107.9	283.3 108.2	115
38	268.0 108.3	268.9 108.6	269.8 109.0	270.7 109.4	271.7 109.8	272.6 110.1	273.5 110.5	274.4 110.9	275.4 111.2	276.4 111.5	277.4 111.8	278.4 112.1	279.4 112.4	280.4 112.7	281.4 113.0	116
39	266.0 112.9	266.9 113.3	267.9 113.7	268.8 114.1	269.7 114.5	270.6 114.9	271.5 115.3	272.5 115.7	273.4 116.0	274.4 116.3	275.4 116.6	276.4 116.9	277.4 117.2	278.4 117.5	279.4 117.8	117
40	264.0 117.5	264.9 118.0	265.8 118.4	266.8 118.8	267.7 119.2	268.6 119.6	269.5 120.0	270.4 120.4	271.4 120.7	272.4 121.0	273.4 121.3	274.4 121.6	275.4 121.9	276.4 122.2	277.4 122.5	118
41	261.9 122.1	262.8 122.6	263.7 123.0	264.6 123.4	265.5 123.8	266.5 124.2	267.4 124.6	268.3 125.0	269.3 125.3	270.3 125.6	271.3 125.9	272.3 126.2	273.3 126.5	274.3 126.8	275.3 127.1	119
42	259.8 126.7	260.7 127.1	261.6 127.6	262.4 128.0	263.3 128.4	264.2 128.9	265.1 129.3	266.0 129.7	267.0 130.0	268.0 130.3	269.0 130.6	270.0 130.9	271.0 131.2	272.0 131.5	273.0 131.8	120
43	257.5 131.2	258.4 131.7	259.3 132.1	260.2 132.6	261.1 133.0	262.0 133.5	262.8 133.9	263.7 134.3	264.6 134.6	265.5 134.9	266.4 135.2	267.3 135.5	268.2 135.8	269.1 136.1	270.0 136.4	121
44	255.2 135.7	256.1 136.1	256.9 136.6	257.8 137.1	258.7 137.6	259.6 138.0	260.5 138.5	261.4 138.9	262.3 139.2	263.2 139.5	264.1 139.8	265.0 140.1	265.9 140.4	266.8 140.7	267.7 141.0	122
45	252.8 140.1	253.6 140.6	254.5 141.1	255.4 141.6	256.3 142.0	257.1 142.5	258.0 143.0	258.9 143.5	259.8 144.0	260.7 144.4	261.6 144.8	262.5 145.2	263.4 145.6	264.3 146.0	265.2 146.4	123
46	250.3 144.5	251.1 145.0	252.0 145.5	252.9 146.0	253.7 146.5	254.6 147.0	255.5 147.5	256.4 148.0	257.3 148.4	258.2 148.8	259.1 149.2	260.0 149.6	260.9 150.0	261.8 150.4	262.7 150.8	124
47	247.7 148.8	248.6 149.4	249.4 149.9	250.3 150.4	251.2 150.9	252.0 151.4	252.9 151.9	253.8 152.3	254.7 152.7	255.6 153.1	256.5 153.5	257.4 153.9	258.3 154.3	259.2 154.7	260.1 15	

Meridional Parts.												(y)
Lat.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	
0'	0.00	60.00	120.02	180.08	240.19	300.38	360.66	421.05	481.57	542.23	603.07	0'
1	1.00	61.00	121.02	181.08	241.20	301.38	361.66	422.06	482.58	543.25	604.08	1
2	2.00	62.00	122.03	182.08	242.20	302.39	362.67	423.06	483.59	544.26	605.10	2
3	3.00	63.00	123.03	183.09	243.20	303.39	363.67	424.07	484.60	545.27	606.12	3
4	4.00	64.00	124.03	184.09	244.20	304.40	364.68	425.08	485.61	546.28	607.13	4
5	5.00	65.00	125.03	185.09	245.21	305.40	365.69	426.09	486.62	547.30	608.15	5
6	6.00	66.00	126.03	186.09	246.21	306.40	366.69	427.09	487.63	548.31	609.16	6
7	7.00	67.00	127.03	187.09	247.21	307.41	367.70	428.10	488.64	549.32	610.18	7
8	8.00	68.00	128.03	188.09	248.21	308.41	368.70	429.11	489.65	550.34	611.19	8
9	9.00	69.00	129.03	189.09	249.22	309.42	369.71	430.12	490.66	551.35	612.21	9
10	10.00	70.00	130.03	190.10	250.22	310.42	370.72	431.13	491.67	552.36	613.23	10
11	11.00	71.00	131.03	191.10	251.22	311.42	371.72	432.13	492.68	553.37	614.24	11
12	12.00	72.00	132.03	192.10	252.23	312.43	372.73	433.14	493.69	554.39	615.26	12
13	13.00	73.00	133.03	193.10	253.23	313.43	373.74	434.15	494.70	555.40	616.27	13
14	14.00	74.01	134.03	194.10	254.23	314.44	374.74	435.16	495.71	556.41	617.29	14
15	15.00	75.01	135.03	195.10	255.23	315.44	375.75	436.17	496.72	557.43	618.31	15
16	16.00	76.01	136.03	196.11	256.24	316.45	376.75	437.17	497.73	558.44	619.32	16
17	17.00	77.01	137.04	197.11	257.24	317.45	377.76	438.18	498.74	559.45	620.34	17
18	18.00	78.01	138.04	198.11	258.24	318.45	378.76	439.19	499.75	560.47	621.36	18
19	19.00	79.01	139.04	199.11	259.25	319.46	379.77	440.20	500.76	561.48	622.37	19
20	20.00	80.01	140.04	200.11	260.25	320.46	380.78	441.21	501.77	562.49	623.39	20
21	21.00	81.01	141.04	201.11	261.25	321.47	381.78	442.21	502.78	563.51	624.40	21
22	22.00	82.01	142.04	202.12	262.25	322.47	382.79	443.22	503.79	564.52	625.42	22
23	23.00	83.01	143.04	203.12	263.26	323.48	383.79	444.23	504.80	565.53	626.44	23
24	24.00	84.01	144.04	204.12	264.26	324.48	384.80	445.24	505.81	566.55	627.45	24
25	25.00	85.01	145.04	205.12	265.26	325.48	385.81	446.25	506.83	567.56	628.47	25
26	26.00	86.01	146.04	206.12	266.27	326.49	386.81	447.26	507.84	568.57	629.49	26
27	27.00	87.01	147.04	207.13	267.27	327.49	387.82	448.26	508.85	569.59	630.50	27
28	28.00	88.01	148.05	208.13	268.27	328.50	388.83	449.27	509.86	570.60	631.52	28
29	29.00	89.01	149.05	209.13	269.27	329.50	389.83	450.28	510.87	571.62	632.54	29
30	30.00	90.01	150.05	210.13	270.28	330.51	390.84	451.29	511.88	572.63	633.56	30
31	31.00	91.01	151.05	211.13	271.28	331.51	391.85	452.30	512.89	573.64	634.57	31
32	32.00	92.01	152.05	212.13	272.28	332.52	392.85	453.31	513.90	574.66	635.59	32
33	33.00	93.01	153.05	213.14	273.29	333.52	393.86	454.32	514.91	575.67	636.61	33
34	34.00	94.01	154.05	214.14	274.29	334.53	394.86	455.33	515.93	576.69	637.62	34
35	35.00	95.01	155.05	215.14	275.29	335.53	395.87	456.34	516.94	577.70	638.64	35
36	36.00	96.01	156.05	216.14	276.30	336.54	396.88	457.34	517.95	578.71	639.66	36
37	37.00	97.01	157.05	217.14	277.30	337.54	397.88	458.35	518.96	579.73	640.68	37
38	38.00	98.01	158.06	218.15	278.30	338.55	398.89	459.36	519.97	580.74	641.69	38
39	39.00	99.01	159.06	219.15	279.31	339.55	399.90	460.37	520.98	581.76	642.71	39
40	40.00	100.01	160.06	220.15	280.31	340.56	400.91	461.38	521.99	582.77	643.73	40
41	41.00	101.01	161.06	221.15	281.31	341.56	401.91	462.39	523.01	583.79	644.75	41
42	42.00	102.01	162.06	222.15	282.32	342.57	402.92	463.40	524.02	584.80	645.76	42
43	43.00	103.02	163.06	223.16	283.32	343.57	403.93	464.41	525.03	585.81	646.78	43
44	44.00	104.02	164.06	224.16	284.32	344.58	404.93	465.41	526.04	586.83	647.80	44
45	45.00	105.02	165.06	225.16	285.33	345.58	405.94	466.42	527.05	587.84	648.82	45
46	46.00	106.02	166.06	226.16	286.33	346.59	406.95	467.43	528.06	588.86	649.84	46
47	47.00	107.02	167.07	227.16	287.33	347.59	407.95	468.44	529.08	589.87	650.85	47
48	48.00	108.02	168.07	228.17	288.34	348.60	408.96	469.45	530.09	590.89	651.87	48
49	49.00	109.02	169.07	229.17	289.34	349.60	409.97	470.46	531.10	591.90	652.89	49
50	50.00	110.02	170.07	230.17	290.34	350.61	410.97	471.47	532.11	592.92	653.91	50
51	51.00	111.02	171.07	231.17	291.35	351.61	411.98	472.48	533.12	593.93	654.93	51
52	52.00	112.02	172.07	232.18	292.35	352.62	412.99	473.49	534.14	594.95	655.94	52
53	53.00	113.02	173.07	233.18	293.35	353.62	414.00	474.50	535.15	595.96	656.96	53
54	54.00	114.02	174.07	234.18	294.36	354.63	415.00	475.51	536.16	596.98	657.98	54
55	55.00	115.02	175.07	235.18	295.36	355.63	416.01	476.52	537.17	597.99	659.00	55
56	56.00	116.02	176.08	236.18	296.37	356.64	417.02	477.53	538.18	599.01	660.02	56
57	57.00	117.02	177.08	237.19	297.37	357.64	418.03	478.54	539.20	600.02	661.04	57
58	58.00	118.02	178.08	238.19	298.37	358.65	419.03	479.55	540.21	601.04	662.05	58
59	59.00	119.02	179.08	239.19	299.38	359.65	420.04	480.56	541.22	602.05	663.07	59
60	60.00	120.02	180.08	240.19	300.38	360.66	421.05	481.57	542.23	603.07	664.09	60
Lat.	0°	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	

Meridional Parts.											(y)
Lat.	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	
0°	664.09	725.32	786.78	848.49	910.46	972.73	1035.30	1098.22	1161.49	1225.14	0°
1	665.11	726.34	787.81	849.52	911.50	973.77	1036.35	1099.27	1162.54	1226.20	1
2	666.13	727.37	788.83	850.55	912.53	974.81	1037.40	1100.32	1163.60	1227.27	2
3	667.15	728.39	789.86	851.58	913.57	975.85	1038.44	1101.37	1164.66	1228.33	3
4	668.17	729.41	790.89	852.61	914.60	976.89	1039.49	1102.42	1165.72	1229.40	4
5	669.19	730.43	791.91	853.64	915.64	977.93	1040.53	1103.47	1166.78	1230.46	5
6	670.21	731.46	792.94	854.67	916.67	978.97	1041.58	1104.53	1167.83	1231.53	6
7	671.22	732.48	793.97	855.70	917.71	980.01	1042.63	1105.58	1168.89	1232.59	7
8	672.24	733.50	794.99	856.73	918.75	981.05	1043.67	1106.63	1169.95	1233.66	8
9	673.26	734.53	796.02	857.76	919.78	982.09	1044.72	1107.68	1171.01	1234.72	9
10	674.28	735.55	797.04	858.80	920.82	983.13	1045.77	1108.74	1172.07	1235.79	10
11	675.30	736.57	798.07	859.83	921.85	984.17	1046.81	1109.79	1173.13	1236.85	11
12	676.32	737.59	799.10	860.86	922.89	985.22	1047.86	1110.84	1174.19	1237.92	12
13	677.34	738.62	800.13	861.89	923.93	986.26	1048.91	1111.89	1175.24	1238.98	13
14	678.36	739.64	801.15	862.92	924.96	987.30	1049.95	1112.95	1176.30	1240.05	14
15	679.38	740.66	802.18	863.95	926.00	988.34	1051.00	1114.00	1177.36	1241.11	15
16	680.40	741.69	803.21	864.98	927.03	989.38	1052.05	1115.05	1178.42	1242.18	16
17	681.42	742.71	804.24	866.02	928.07	990.42	1053.09	1116.11	1179.48	1243.25	17
18	682.44	743.73	805.26	867.05	929.11	991.47	1054.14	1117.16	1180.54	1244.31	18
19	683.46	744.76	806.29	868.08	930.15	992.51	1055.19	1118.21	1181.60	1245.38	19
20	684.48	745.78	807.32	869.11	931.18	993.55	1056.24	1119.27	1182.66	1246.44	20
21	685.50	746.81	808.35	870.14	932.22	994.59	1057.28	1120.32	1183.72	1247.51	21
22	686.52	747.83	809.37	871.18	933.26	995.63	1058.33	1121.37	1184.78	1248.58	22
23	687.54	748.85	810.40	872.21	934.29	996.68	1059.38	1122.43	1185.84	1249.64	23
24	688.56	749.88	811.43	873.24	935.33	997.72	1060.43	1123.48	1186.90	1250.71	24
25	689.58	750.90	812.46	874.27	936.37	998.76	1061.48	1124.53	1187.96	1251.78	25
26	690.60	751.92	813.49	875.31	937.40	999.80	1062.52	1125.59	1189.02	1252.85	26
27	691.62	752.95	814.52	876.34	938.44	1000.85	1063.57	1126.64	1190.08	1253.91	27
28	692.64	753.97	815.54	877.37	939.48	1001.89	1064.62	1127.70	1191.14	1254.98	28
29	693.66	755.00	816.57	878.40	940.52	1002.93	1065.67	1128.75	1192.20	1256.05	29
30	694.68	756.02	817.60	879.44	941.56	1003.97	1066.72	1129.81	1193.26	1257.12	30
31	695.70	757.05	818.63	880.47	942.59	1005.02	1067.77	1130.86	1194.32	1258.18	31
32	696.72	758.07	819.66	881.50	943.63	1006.06	1068.81	1131.92	1195.39	1259.25	32
33	697.74	759.09	820.69	882.54	944.67	1007.10	1069.86	1132.97	1196.45	1260.32	33
34	698.76	760.12	821.71	883.57	945.71	1008.15	1070.91	1134.03	1197.51	1261.39	34
35	699.78	761.14	822.74	884.60	946.74	1009.19	1071.96	1135.08	1198.57	1262.45	35
36	700.80	762.17	823.77	885.64	947.78	1010.23	1073.01	1136.14	1199.63	1263.52	36
37	701.82	763.19	824.80	886.67	948.82	1011.28	1074.06	1137.19	1200.69	1264.59	37
38	702.85	764.22	825.83	887.70	949.86	1012.32	1075.11	1138.25	1201.75	1265.66	38
39	703.87	765.24	826.86	888.74	950.90	1013.36	1076.16	1139.30	1202.82	1266.73	39
40	704.89	766.27	827.89	889.77	951.94	1014.41	1077.21	1140.36	1203.88	1267.80	40
41	705.91	767.29	828.92	890.80	952.98	1015.45	1078.26	1141.41	1204.94	1268.87	41
42	706.93	768.32	829.95	891.84	954.01	1016.50	1079.31	1142.47	1206.00	1269.93	42
43	707.95	769.34	830.98	892.87	955.05	1017.54	1080.36	1143.52	1207.06	1271.00	43
44	708.97	770.37	832.00	893.91	956.09	1018.58	1081.41	1144.58	1208.13	1272.07	44
45	709.99	771.39	833.03	894.94	957.13	1019.63	1082.46	1145.64	1209.19	1273.14	45
46	711.02	772.42	834.06	895.97	958.17	1020.67	1083.51	1146.69	1210.25	1274.21	46
47	712.04	773.44	835.09	897.01	959.21	1021.72	1084.56	1147.75	1211.31	1275.28	47
48	713.06	774.47	836.12	898.04	960.25	1022.76	1085.61	1148.80	1212.38	1276.35	48
49	714.08	775.49	837.15	899.08	961.29	1023.81	1086.66	1149.86	1213.44	1277.42	49
50	715.10	776.52	838.18	900.11	962.33	1024.85	1087.71	1150.92	1214.50	1278.49	50
51	716.12	777.54	839.21	901.15	963.37	1025.90	1088.76	1151.97	1215.57	1279.56	51
52	717.15	778.57	840.24	902.18	964.41	1026.94	1089.81	1153.03	1216.63	1280.63	52
53	718.17	779.59	841.27	903.22	965.45	1027.99	1090.86	1154.09	1217.69	1281.70	53
54	719.19	780.62	842.30	904.25	966.49	1029.03	1091.91	1155.14	1218.76	1282.77	54
55	720.21	781.65	843.33	905.28	967.53	1030.08	1092.96	1156.20	1219.82	1283.84	55
56	721.23	782.67	844.36	906.32	968.57	1031.12	1094.01	1157.26	1220.88	1284.91	56
57	722.26	783.70	845.39	907.35	969.61	1032.17	1095.06	1158.32	1221.95	1285.98	57
58	723.28	784.73	846.42	908.39	970.65	1033.21	1096.11	1159.37	1223.01	1287.05	58
59	724.30	785.75	847.45	909.43	971.69	1034.26	1097.16	1160.43	1224.07	1288.13	59
60	725.32	786.78	848.49	910.46	972.73	1035.30	1098.22	1161.49	1225.14	1289.20	60
Lat.	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	

Meridional Parts.

(y)

Lat.	21°	22°	23°	24°	25°	26°	27°	28°	29°	30°	
0'	1289.20	1353.69	1418.63	1484.06	1549.99	1616.47	1683.52	1751.16	1819.44	1888.38	0'
1	1290.27	1354.76	1419.72	1485.15	1551.10	1617.58	1684.64	1752.29	1820.58	1889.53	1
2	1291.34	1355.84	1420.80	1486.25	1552.20	1618.70	1685.76	1753.43	1821.72	1890.69	2
3	1292.41	1356.92	1421.89	1487.34	1553.31	1619.81	1686.88	1754.56	1822.87	1891.84	3
4	1293.48	1358.00	1422.98	1488.44	1554.41	1620.92	1688.01	1755.69	1824.01	1893.00	4
5	1294.55	1359.08	1424.06	1489.53	1555.51	1622.04	1689.13	1756.83	1825.16	1894.15	5
6	1295.63	1360.16	1425.15	1490.63	1556.62	1623.15	1690.25	1757.96	1826.30	1895.31	6
7	1296.70	1361.24	1426.24	1491.72	1557.72	1624.26	1691.38	1759.09	1827.44	1896.46	7
8	1297.77	1362.32	1427.32	1492.82	1558.83	1625.38	1692.50	1760.23	1828.59	1897.62	8
9	1298.84	1363.40	1428.41	1493.91	1559.93	1626.49	1693.62	1761.36	1829.73	1898.78	9
10	1299.91	1364.48	1429.50	1495.01	1561.04	1627.61	1694.75	1762.50	1830.88	1899.93	10
11	1300.99	1365.56	1430.59	1496.11	1562.14	1628.72	1695.87	1763.63	1832.02	1901.09	11
12	1302.06	1366.64	1431.68	1497.20	1563.25	1629.84	1697.00	1764.77	1833.17	1902.25	12
13	1303.13	1367.72	1432.76	1498.30	1564.35	1630.95	1698.12	1765.90	1834.32	1903.40	13
14	1304.20	1368.80	1433.85	1499.40	1565.46	1632.06	1699.25	1767.04	1835.46	1904.56	14
15	1305.28	1369.88	1434.94	1500.49	1566.56	1633.18	1700.37	1768.17	1836.61	1905.72	15
16	1306.35	1370.96	1436.03	1501.59	1567.67	1634.29	1701.50	1769.31	1837.75	1906.88	16
17	1307.42	1372.04	1437.12	1502.69	1568.77	1635.41	1702.62	1770.44	1838.90	1908.03	17
18	1308.50	1373.12	1438.21	1503.78	1569.88	1636.52	1703.75	1771.58	1840.05	1909.19	18
19	1309.57	1374.20	1439.29	1504.88	1570.99	1637.64	1704.87	1772.71	1841.19	1910.35	19
20	1310.64	1375.28	1440.38	1505.98	1572.09	1638.76	1706.00	1773.85	1842.34	1911.51	20
21	1311.72	1376.36	1441.47	1507.08	1573.20	1639.87	1707.12	1774.98	1843.49	1912.67	21
22	1312.79	1377.44	1442.56	1508.17	1574.31	1640.99	1708.25	1776.12	1844.64	1913.83	22
23	1313.86	1378.52	1443.65	1509.27	1575.41	1642.10	1709.37	1777.26	1845.78	1914.98	23
24	1314.94	1379.61	1444.74	1510.37	1576.52	1643.22	1710.50	1778.39	1846.93	1916.14	24
25	1316.01	1380.69	1445.83	1511.47	1577.63	1644.34	1711.63	1779.53	1848.08	1917.30	25
26	1317.08	1381.77	1446.92	1512.57	1578.73	1645.45	1712.75	1780.67	1849.23	1918.46	26
27	1318.16	1382.85	1448.01	1513.67	1579.84	1646.57	1713.88	1781.81	1850.37	1919.62	27
28	1319.23	1383.93	1449.10	1514.76	1580.95	1647.69	1715.01	1782.94	1851.52	1920.78	28
29	1320.31	1385.02	1450.19	1515.86	1582.06	1648.80	1716.14	1784.08	1852.67	1921.94	29
30	1321.38	1386.10	1451.28	1516.96	1583.17	1649.92	1717.26	1785.22	1853.82	1923.10	30
31	1322.45	1387.18	1452.37	1518.06	1584.27	1651.04	1718.39	1786.36	1854.97	1924.26	31
32	1323.53	1388.26	1453.46	1519.16	1585.38	1652.16	1719.52	1787.50	1856.12	1925.43	32
33	1324.60	1389.35	1454.55	1520.26	1586.49	1653.27	1720.65	1788.63	1857.27	1926.59	33
34	1325.68	1390.43	1455.64	1521.36	1587.60	1654.39	1721.77	1789.77	1858.42	1927.75	34
35	1326.75	1391.51	1456.73	1522.46	1588.71	1655.51	1722.90	1790.91	1859.57	1928.91	35
36	1327.83	1392.59	1457.83	1523.56	1589.82	1656.63	1724.03	1792.05	1860.72	1930.07	36
37	1328.90	1393.68	1458.92	1524.66	1590.92	1657.75	1725.16	1793.19	1861.87	1931.23	37
38	1329.98	1394.76	1460.01	1525.76	1592.03	1658.87	1726.29	1794.33	1863.02	1932.40	38
39	1331.06	1395.84	1461.10	1526.86	1593.14	1659.98	1727.42	1795.47	1864.17	1933.56	39
40	1332.13	1396.93	1462.19	1527.96	1594.25	1661.10	1728.54	1796.61	1865.32	1934.72	40
41	1333.21	1398.01	1463.28	1529.06	1595.36	1662.22	1729.67	1797.75	1866.47	1935.88	41
42	1334.29	1399.10	1464.38	1530.16	1596.47	1663.34	1730.80	1798.89	1867.62	1937.05	42
43	1335.37	1400.18	1465.47	1531.26	1597.58	1664.46	1731.93	1800.03	1868.77	1938.21	43
44	1336.44	1401.26	1466.56	1532.36	1598.69	1665.58	1733.06	1801.17	1869.92	1939.37	44
45	1337.52	1402.35	1467.65	1533.46	1599.80	1666.70	1734.19	1802.31	1871.08	1940.54	45
46	1338.60	1403.43	1468.75	1534.56	1600.91	1667.82	1735.32	1803.45	1872.23	1941.70	46
47	1339.67	1404.52	1469.84	1535.66	1602.02	1668.94	1736.45	1804.59	1873.38	1942.86	47
48	1340.75	1405.60	1470.93	1536.77	1603.13	1670.06	1737.58	1805.73	1874.53	1944.03	48
49	1341.83	1406.69	1472.02	1537.87	1604.24	1671.18	1738.71	1806.87	1875.69	1945.19	49
50	1342.91	1407.77	1473.12	1538.97	1605.35	1672.30	1739.84	1808.01	1876.84	1946.36	50
51	1343.98	1408.86	1474.21	1540.07	1606.46	1673.42	1740.98	1809.15	1877.99	1947.52	51
52	1345.06	1409.94	1475.30	1541.17	1607.58	1674.54	1742.11	1810.30	1879.14	1948.69	52
53	1346.14	1411.03	1476.40	1542.27	1608.69	1675.66	1743.24	1811.44	1880.30	1949.85	53
54	1347.22	1412.11	1477.49	1543.38	1609.80	1676.79	1744.37	1812.58	1881.45	1951.02	54
55	1348.29	1413.20	1478.59	1544.48	1610.91	1677.91	1745.50	1813.72	1882.60	1952.18	55
56	1349.37	1414.28	1479.68	1545.58	1612.02	1679.03	1746.63	1814.86	1883.76	1953.35	56
57	1350.45	1415.37	1480.77	1546.69	1613.13	1680.15	1747.76	1816.01	1884.91	1954.51	57
58	1351.53	1416.46	1481.87	1547.79	1614.25	1681.27	1748.90	1817.15	1886.07	1955.68	58
59	1352.61	1417.54	1482.96	1548.89	1615.36	1682.39	1750.03	1818.29	1887.22	1956.85	59
60	1353.69	1418.63	1484.06	1549.99	1616.47	1683.52	1751.16	1819.44	1888.38	1958.01	60
Lat.	21°	22°	23°	24°	25°	26°	27°	28°	29°	30°	

Meridional Parts.											(y)
Lat.	31°	32°	33°	34°	35°	36°	37°	38°	39°	40°	
0°	1958.01	2028.38	2099.53	2171.48	2244.29	2317.99	2392.63	2468.26	2544.93	2622.69	0°
1	1959.18	2029.56	2100.72	2172.69	2245.51	2319.2	2393.88	2469.53	2546.22	2624.00	1
2	1960.35	2030.74	2101.91	2173.89	2246.73	2320.46	2395.14	2470.80	2547.50	2625.30	2
3	1961.51	2031.92	2103.10	2175.10	2247.95	2321.70	2396.39	2472.07	2548.79	2626.61	3
4	1962.68	2033.10	2104.30	2176.31	2249.17	2322.93	2397.64	2473.34	2550.08	2627.91	4
5	1963.85	2034.28	2105.49	2177.51	2250.39	2324.17	2398.90	2474.61	2551.37	2629.22	5
6	1965.02	2035.46	2106.68	2178.72	2251.62	2325.41	2400.15	2475.88	2552.66	2630.53	6
7	1966.18	2036.64	2107.88	2179.93	2252.84	2326.65	2401.40	2477.15	2553.95	2631.84	7
8	1967.35	2037.82	2109.07	2181.14	2254.06	2327.89	2402.66	2478.42	2555.23	2633.14	8
9	1968.52	2039.00	2110.27	2182.35	2255.28	2329.12	2403.91	2479.69	2556.52	2634.45	9
10	1969.69	2040.19	2111.46	2183.55	2256.51	2330.36	2405.17	2480.97	2557.81	2635.76	10
11	1970.86	2041.37	2112.66	2184.76	2257.73	2331.60	2406.42	2482.24	2559.10	2637.07	11
12	1972.03	2042.55	2113.85	2185.97	2258.95	2332.84	2407.68	2483.51	2560.39	2638.38	12
13	1973.20	2043.73	2115.05	2187.18	2260.18	2334.08	2408.93	2484.78	2561.68	2639.69	13
14	1974.37	2044.91	2116.24	2188.39	2261.40	2335.32	2410.19	2486.06	2562.97	2641.00	14
15	1975.54	2046.10	2117.44	2189.60	2262.63	2336.56	2411.44	2487.33	2564.27	2642.31	15
16	1976.71	2047.28	2118.63	2190.81	2263.85	2337.80	2412.70	2488.60	2565.56	2643.62	16
17	1977.88	2048.46	2119.83	2192.02	2265.08	2339.04	2413.96	2489.88	2566.85	2644.93	17
18	1979.05	2049.64	2121.03	2193.23	2266.30	2340.28	2415.21	2491.15	2568.14	2646.24	18
19	1980.22	2050.83	2122.22	2194.44	2267.53	2341.52	2416.47	2492.43	2569.43	2647.55	19
20	1981.39	2052.01	2123.42	2195.65	2268.75	2342.76	2417.73	2493.70	2570.73	2648.86	20
21	1982.56	2053.19	2124.62	2196.86	2269.98	2344.00	2418.99	2494.97	2572.02	2650.17	21
22	1983.73	2054.38	2125.81	2198.07	2271.20	2345.25	2420.24	2496.25	2573.31	2651.49	22
23	1984.90	2055.56	2127.01	2199.29	2272.43	2346.49	2421.50	2497.52	2574.61	2652.80	23
24	1986.07	2056.75	2128.21	2200.50	2273.66	2347.73	2422.76	2498.80	2575.90	2654.11	24
25	1987.24	2057.93	2129.41	2201.71	2274.88	2348.97	2424.02	2500.08	2577.19	2655.43	25
26	1988.41	2059.11	2130.61	2202.92	2276.11	2350.21	2425.28	2501.35	2578.49	2656.74	26
27	1989.59	2060.30	2131.80	2204.14	2277.34	2351.46	2426.54	2502.63	2579.78	2658.05	27
28	1990.76	2061.49	2133.00	2205.35	2278.57	2352.70	2427.80	2503.91	2581.08	2659.37	28
29	1991.93	2062.67	2134.20	2206.56	2279.79	2353.95	2429.06	2505.18	2582.37	2660.68	29
30	1993.10	2063.86	2135.40	2207.78	2281.02	2355.19	2430.32	2506.46	2583.67	2662.00	30
31	1994.28	2065.04	2136.60	2208.99	2282.25	2356.43	2431.58	2507.74	2584.97	2663.31	31
32	1995.45	2066.23	2137.80	2210.20	2283.48	2357.68	2432.84	2509.02	2586.26	2664.63	32
33	1996.62	2067.41	2139.00	2211.42	2284.71	2358.92	2434.10	2510.30	2587.56	2665.94	33
34	1997.80	2068.60	2140.20	2212.63	2285.94	2360.17	2435.36	2511.58	2588.86	2667.26	34
35	1998.97	2069.79	2141.40	2213.84	2287.17	2361.41	2436.62	2512.86	2590.15	2668.58	35
36	2000.14	2070.97	2142.60	2215.06	2288.40	2362.66	2437.89	2514.14	2591.45	2669.89	36
37	2001.32	2072.16	2143.80	2216.27	2289.63	2363.90	2439.15	2515.41	2592.75	2671.21	37
38	2002.49	2073.35	2145.00	2217.49	2290.86	2365.15	2440.41	2516.69	2594.05	2672.53	38
39	2003.67	2074.54	2146.20	2218.70	2292.09	2366.40	2441.68	2517.97	2595.35	2673.85	39
40	2004.84	2075.72	2147.40	2219.92	2293.32	2367.64	2442.94	2519.25	2596.65	2675.16	40
41	2006.02	2076.91	2148.61	2221.14	2294.55	2368.89	2444.20	2520.54	2597.95	2676.48	41
42	2007.19	2078.10	2149.81	2222.35	2295.78	2370.14	2445.47	2521.82	2599.24	2677.80	42
43	2008.37	2079.29	2151.01	2223.57	2297.01	2371.38	2446.73	2523.10	2600.54	2679.12	43
44	2009.54	2080.48	2152.21	2224.79	2298.24	2372.63	2447.99	2524.38	2601.84	2680.44	44
45	2010.72	2081.67	2153.41	2226.00	2299.48	2373.88	2449.26	2525.66	2603.14	2681.76	45
46	2011.90	2082.86	2154.62	2227.22	2300.71	2375.13	2450.52	2526.95	2604.45	2683.08	46
47	2013.07	2084.04	2155.82	2228.44	2301.94	2376.38	2451.79	2528.23	2605.75	2684.40	47
48	2014.25	2085.23	2157.02	2229.66	2303.17	2377.63	2453.05	2529.51	2607.05	2685.72	48
49	2015.43	2086.42	2158.23	2230.87	2304.41	2378.87	2454.32	2530.79	2608.35	2687.04	49
50	2016.60	2087.61	2159.43	2232.09	2305.64	2380.12	2455.58	2532.08	2609.65	2688.36	50
51	2017.78	2088.80	2160.63	2233.31	2306.88	2381.37	2456.85	2533.36	2610.95	2689.69	51
52	2018.96	2089.99	2161.84	2234.53	2308.11	2382.62	2458.12	2534.65	2612.26	2691.01	52
53	2020.13	2091.19	2163.04	2235.75	2309.34	2383.87	2459.39	2535.93	2613.56	2692.33	53
54	2021.31	2092.38	2164.25	2236.97	2310.58	2385.12	2460.65	2537.22	2614.86	2693.65	54
55	2022.49	2093.57	2165.45	2238.19	2311.81	2386.37	2461.92	2538.50	2616.17	2694.98	55
56	2023.67	2094.76	2166.66	2239.41	2313.05	2387.62	2463.19	2539.79	2617.47	2696.30	56
57	2024.85	2095.95	2167.86	2240.63	2314.28	2388.88	2464.46	2541.07	2618.78	2697.63	57
58	2026.03	2097.14	2169.07	2241.85	2315.52	2390.13	2465.72	2542.36	2620.08	2698.95	58
59	2027.20	2098.33	2170.28	2243.07	2316.75	2391.38	2466.99	2543.64	2621.38	2700.27	59
60	2028.38	2099.53	2171.48	2244.29	2317.99	2392.63	2468.26	2544.93	2622.69	2701.60	60
Lat.	31°	32°	33°	34°	35°	36°	37°	38°	39°	40°	

Meridional Parts.											(y)
Lat.	41°	42°	43°	44°	45°	46°	47°	48°	49°	50°	
0'	2701.60	2781.71	2863.10	2945.81	3029.94	3115.58	3202.71	3291.53	3382.08	3474.47	0'
1	2702.92	2783.06	2864.46	2947.21	3031.35	3116.99	3204.18	3293.02	3383.61	3476.03	1
2	2704.25	2784.40	2865.83	2948.60	3032.77	3118.43	3205.65	3294.52	3385.13	3477.59	2
3	2705.57	2785.75	2867.20	2949.99	3034.18	3119.87	3207.12	3296.01	3386.66	3479.14	3
4	2706.90	2787.09	2868.57	2951.38	3035.60	3121.31	3208.58	3297.51	3388.18	3480.70	4
5	2708.23	2788.44	2869.94	2952.77	3037.02	3122.75	3210.05	3299.01	3389.71	3482.26	5
6	2709.55	2789.79	2871.31	2954.16	3038.43	3124.19	3211.52	3300.51	3391.24	3483.82	6
7	2710.88	2791.14	2872.68	2955.56	3039.85	3125.63	3212.99	3302.00	3392.77	3485.38	7
8	2712.21	2792.49	2874.05	2956.95	3041.27	3127.08	3214.46	3303.50	3394.29	3486.94	8
9	2713.54	2793.84	2875.42	2958.34	3042.68	3128.52	3215.93	3305.00	3395.82	3488.50	9
10	2714.86	2795.19	2876.79	2959.74	3044.10	3129.96	3217.40	3306.50	3397.35	3490.06	10
11	2716.19	2796.54	2878.16	2961.13	3045.52	3131.41	3218.87	3308.00	3398.88	3491.62	11
12	2717.52	2797.89	2879.53	2962.53	3046.94	3132.85	3220.34	3309.50	3400.41	3493.18	12
13	2718.85	2799.24	2880.90	2963.92	3048.36	3134.30	3221.82	3311.00	3401.94	3494.74	13
14	2720.18	2800.59	2882.28	2965.32	3049.78	3135.75	3223.29	3312.50	3403.47	3496.31	14
15	2721.51	2801.94	2883.65	2966.71	3051.20	3137.19	3224.76	3314.00	3405.00	3497.87	15
16	2722.84	2803.29	2885.02	2968.11	3052.62	3138.64	3226.23	3315.50	3406.54	3499.43	16
17	2724.17	2804.64	2886.39	2969.50	3054.04	3140.08	3227.71	3317.00	3408.07	3501.00	17
18	2725.50	2805.99	2887.77	2970.90	3055.46	3141.53	3229.18	3318.51	3409.60	3502.56	18
19	2726.83	2807.34	2889.14	2972.30	3056.88	3142.98	3230.66	3320.01	3411.14	3504.13	19
20	2728.17	2808.70	2890.52	2973.70	3058.31	3144.42	3232.13	3321.52	3412.67	3505.70	20
21	2729.50	2810.05	2891.89	2975.09	3059.73	3145.87	3233.61	3323.02	3414.20	3507.26	21
22	2730.83	2811.40	2893.27	2976.49	3061.15	3147.32	3235.08	3324.53	3415.74	3508.83	22
23	2732.16	2812.76	2894.64	2977.89	3062.58	3148.77	3236.56	3326.03	3417.28	3510.40	23
24	2733.50	2814.11	2896.02	2979.29	3064.00	3150.22	3238.04	3327.54	3418.81	3511.97	24
25	2734.83	2815.46	2897.40	2980.69	3065.42	3151.67	3239.52	3329.04	3420.35	3513.54	25
26	2736.16	2816.82	2898.77	2982.09	3066.85	3153.12	3240.99	3330.55	3421.89	3515.11	26
27	2737.50	2818.17	2900.15	2983.49	3068.27	3154.57	3242.47	3332.06	3423.43	3516.68	27
28	2738.83	2819.53	2901.53	2984.89	3069.70	3156.03	3243.95	3333.56	3424.96	3518.25	28
29	2740.17	2820.88	2902.91	2986.29	3071.13	3157.48	3245.43	3335.07	3426.50	3519.82	29
30	2741.50	2822.24	2904.28	2987.70	3072.55	3158.93	3246.91	3336.58	3428.04	3521.39	30
31	2742.84	2823.60	2905.66	2989.10	3073.98	3160.38	3248.39	3338.09	3429.58	3522.96	31
32	2744.17	2824.95	2907.04	2990.50	3075.41	3161.84	3249.87	3339.60	3431.12	3524.54	32
33	2745.51	2826.31	2908.42	2991.90	3076.84	3163.29	3251.35	3341.11	3432.66	3526.11	33
34	2746.84	2827.67	2909.80	2993.31	3078.26	3164.74	3252.84	3342.62	3434.20	3527.68	34
35	2748.18	2829.03	2911.18	2994.71	3079.69	3166.20	3254.32	3344.14	3435.75	3529.26	35
36	2749.52	2830.39	2912.55	2996.12	3081.12	3167.65	3255.80	3345.65	3437.29	3530.83	36
37	2750.85	2831.74	2913.94	2997.52	3082.55	3169.11	3257.28	3347.16	3438.83	3532.41	37
38	2752.19	2833.10	2915.32	2998.93	3083.98	3170.57	3258.77	3348.67	3440.38	3533.99	38
39	2753.53	2834.46	2916.71	3000.33	3085.41	3172.02	3260.25	3350.19	3441.92	3535.56	39
40	2754.87	2835.82	2918.09	3001.74	3086.84	3173.48	3261.74	3351.70	3443.47	3537.14	40
41	2756.21	2837.18	2919.47	3003.14	3088.27	3174.94	3263.22	3353.21	3445.01	3538.72	41
42	2757.55	2838.54	2920.85	3004.55	3089.70	3176.40	3264.71	3354.73	3446.56	3540.30	42
43	2758.89	2839.90	2922.24	3005.96	3091.14	3177.85	3266.19	3356.24	3448.10	3541.88	43
44	2760.23	2841.27	2923.62	3007.36	3092.57	3179.31	3267.68	3357.76	3449.65	3543.45	44
45	2761.57	2842.63	2925.01	3008.77	3094.00	3180.77	3269.17	3359.28	3451.20	3545.04	45
46	2762.91	2843.99	2926.39	3010.18	3095.43	3182.23	3270.65	3360.79	3452.75	3546.62	46
47	2764.25	2845.35	2927.78	3011.59	3096.87	3183.69	3272.14	3362.31	3454.29	3548.20	47
48	2765.59	2846.71	2929.16	3013.00	3098.30	3185.15	3273.63	3363.83	3455.84	3549.78	48
49	2766.93	2848.08	2930.55	3014.41	3099.74	3186.61	3275.12	3365.35	3457.39	3551.36	49
50	2768.27	2849.44	2931.93	3015.82	3101.17	3188.07	3276.61	3366.87	3458.94	3552.94	50
51	2769.62	2850.81	2933.32	3017.23	3102.60	3189.54	3278.10	3368.39	3460.49	3554.53	51
52	2770.96	2852.17	2934.71	3018.64	3104.04	3191.00	3279.59	3369.91	3462.04	3556.11	52
53	2772.30	2853.53	2936.09	3020.05	3105.48	3192.46	3281.08	3371.43	3463.60	3557.70	53
54	2773.64	2854.90	2937.48	3021.46	3106.92	3193.92	3282.57	3372.95	3465.15	3559.28	54
55	2774.99	2856.26	2938.87	3022.87	3108.35	3195.39	3284.06	3374.47	3466.70	3560.87	55
56	2776.33	2857.63	2940.26	3024.29	3109.79	3196.85	3285.56	3375.99	3468.26	3562.45	56
57	2777.68	2858.99	2941.65	3025.70	3111.23	3198.32	3287.05	3377.51	3469.81	3564.04	57
58	2779.02	2860.36	2943.04	3027.11	3112.67	3199.78	3288.54	3379.04	3471.36	3565.63	58
59	2780.37	2861.73	2944.42	3028.52	3114.11	3201.25	3290.04	3380.56	3472.92	3567.22	59
60	2781.71	2863.10	2945.81	3029.94	3115.55	3202.71	3291.53	3382.08	3474.47	3568.81	60
Lat.	41°	42°	43°	44°	45°	46°	47°	48°	49°	50°	

Meridional Parts.											(y)
Lat.	51°	52°	53°	54°	55°	56°	57°	58°	59°	60°	
0	3568.81	3665.19	3763.76	3864.64	3967.97	4073.90	4182.62	4294.30	4409.14	4527.37	0
1	3570.40	3666.82	3765.42	3866.34	3969.71	4075.69	4184.46	4296.19	4411.08	4529.37	1
2	3571.99	3668.44	3767.09	3868.04	3971.46	4077.48	4186.29	4298.07	4413.03	4531.37	2
3	3573.58	3670.07	3768.75	3869.74	3973.20	4079.27	4188.13	4299.96	4414.97	4533.37	3
4	3575.17	3671.70	3770.41	3871.45	3974.95	4081.06	4189.97	4301.85	4416.92	4535.38	4
5	3576.76	3673.32	3772.08	3873.15	3976.69	4082.86	4191.81	4303.74	4418.86	4537.38	5
6	3578.35	3674.95	3773.74	3874.86	3978.44	4084.65	4193.65	4305.64	4420.81	4539.39	6
7	3579.94	3676.58	3775.41	3876.56	3980.19	4086.44	4195.49	4307.53	4422.76	4541.39	7
8	3581.54	3678.21	3777.08	3878.27	3981.94	4088.24	4197.34	4309.42	4424.70	4543.40	8
9	3583.13	3679.84	3778.74	3879.98	3983.69	4090.03	4199.18	4311.32	4426.65	4545.41	9
10	3584.73	3681.47	3780.41	3881.68	3985.44	4091.83	4201.02	4313.21	4428.60	4547.42	10
11	3586.32	3683.10	3782.08	3883.39	3987.19	4093.62	4202.87	4315.11	4430.56	4549.43	11
12	3587.92	3684.73	3783.75	3885.10	3988.94	4095.42	4204.71	4317.01	4432.51	4551.44	12
13	3589.51	3686.36	3785.42	3886.81	3990.69	4097.22	4206.56	4318.91	4434.46	4553.45	13
14	3591.11	3687.99	3787.09	3888.52	3992.45	4099.02	4208.41	4320.80	4436.42	4555.47	14
15	3592.71	3689.63	3788.76	3890.23	3994.20	4100.82	4210.26	4322.70	4438.37	4557.48	15
16	3594.30	3691.26	3790.43	3891.95	3995.96	4102.62	4212.10	4324.61	4440.33	4559.50	16
17	3595.90	3692.90	3792.10	3893.66	3997.71	4104.42	4213.95	4326.51	4442.29	4561.52	17
18	3597.50	3694.53	3793.78	3895.37	3999.47	4106.22	4215.80	4328.41	4444.24	4563.53	18
19	3599.10	3696.17	3795.45	3897.09	4001.22	4108.02	4217.66	4330.31	4446.20	4565.55	19
20	3600.70	3697.80	3797.12	3898.80	4002.98	4109.82	4219.51	4332.22	4448.16	4567.57	20
21	3602.30	3699.44	3798.80	3900.52	4004.74	4111.63	4221.36	4334.12	4450.12	4569.59	21
22	3603.90	3701.08	3800.47	3902.23	4006.50	4113.44	4223.22	4336.03	4452.09	4571.61	22
23	3605.50	3702.71	3802.15	3903.95	4008.26	4115.24	4225.07	4337.94	4454.05	4573.64	23
24	3607.11	3704.35	3803.83	3905.67	4010.02	4117.05	4226.93	4339.84	4456.01	4575.66	24
25	3608.71	3705.99	3805.50	3907.38	4011.78	4118.85	4228.78	4341.75	4457.98	4577.69	25
26	3610.32	3707.63	3807.18	3909.10	4013.54	4120.66	4230.64	4343.66	4459.94	4579.71	26
27	3611.92	3709.27	3808.86	3910.82	4015.31	4122.47	4232.50	4345.57	4461.91	4581.74	27
28	3613.52	3710.91	3810.54	3912.54	4017.07	4124.28	4234.36	4347.48	4463.88	4583.77	28
29	3615.13	3712.56	3812.22	3914.26	4018.84	4126.09	4236.22	4349.40	4465.85	4585.80	29
30	3616.74	3714.20	3813.90	3915.99	4020.60	4127.90	4238.08	4351.31	4467.82	4587.83	30
31	3618.34	3715.84	3815.58	3917.71	4022.37	4129.72	4239.94	4353.23	4469.79	4589.86	31
32	3619.95	3717.48	3817.27	3919.43	4024.13	4131.53	4241.80	4355.14	4471.76	4591.89	32
33	3621.56	3719.13	3818.95	3921.16	4025.90	4133.34	4243.67	4357.06	4473.73	4593.92	33
34	3623.17	3720.77	3820.63	3922.88	4027.67	4135.16	4245.53	4358.97	4475.71	4595.96	34
35	3624.78	3722.42	3822.32	3924.61	4029.44	4136.97	4247.39	4360.89	4477.68	4598.00	35
36	3626.39	3724.06	3824.00	3926.33	4031.21	4138.79	4249.26	4362.81	4479.66	4600.03	36
37	3628.00	3725.71	3825.69	3928.06	4032.98	4140.61	4251.13	4364.73	4481.63	4602.07	37
38	3629.61	3727.36	3827.37	3929.79	4034.75	4142.42	4252.99	4366.65	4483.61	4604.11	38
39	3631.22	3729.01	3829.06	3931.51	4036.52	4144.24	4254.86	4368.57	4485.59	4606.15	39
40	3632.83	3730.66	3830.75	3933.24	4038.29	4146.06	4256.73	4370.50	4487.57	4608.19	40
41	3634.44	3732.30	3832.43	3934.97	4040.07	4147.88	4258.60	4372.42	4489.55	4610.23	41
42	3636.06	3733.95	3834.12	3936.70	4041.84	4149.70	4260.47	4374.34	4491.53	4612.27	42
43	3637.67	3735.61	3835.81	3938.43	4043.61	4151.52	4262.34	4376.27	4493.51	4614.32	43
44	3639.28	3737.26	3837.50	3940.16	4045.39	4153.35	4264.22	4378.20	4495.50	4616.36	44
45	3640.90	3738.91	3839.19	3941.90	4047.17	4155.17	4266.09	4380.12	4497.48	4618.41	45
46	3642.51	3740.56	3840.88	3943.63	4048.94	4157.00	4267.97	4382.05	4499.47	4620.45	46
47	3644.13	3742.21	3842.58	3945.36	4050.72	4158.82	4269.84	4383.98	4501.45	4622.50	47
48	3645.75	3743.87	3844.27	3947.10	4052.50	4160.65	4271.72	4385.91	4503.44	4624.55	48
49	3647.36	3745.52	3845.96	3948.83	4054.28	4162.47	4273.59	4387.84	4505.43	4626.60	49
50	3648.98	3747.18	3847.66	3950.57	4056.06	4164.30	4275.47	4389.77	4507.42	4628.65	50
51	3650.60	3748.83	3849.35	3952.31	4057.84	4166.13	4277.35	4391.70	4509.41	4630.71	51
52	3652.22	3750.49	3851.05	3954.04	4059.62	4167.96	4279.23	4393.64	4511.40	4632.76	52
53	3653.84	3752.15	3852.75	3955.78	4061.41	4169.79	4281.11	4395.57	4513.39	4634.81	53
54	3655.46	3753.80	3854.44	3957.52	4063.19	4171.62	4282.99	4397.51	4515.39	4636.87	54
55	3657.08	3755.46	3856.14	3959.26	4064.97	4173.45	4284.87	4399.44	4517.38	4638.93	55
56	3658.70	3757.12	3857.84	3961.00	4066.76	4175.28	4286.76	4401.38	4519.38	4640.98	56
57	3660.32	3758.78	3859.54	3962.74	4068.54	4177.12	4288.64	4403.32	4521.37	4643.04	57
58	3661.95	3760.44	3861.24	3964.48	4070.33	4178.95	4290.53	4405.26	4523.37	4645.10	58
59	3663.57	3762.10	3862.94	3966.22	4072.12	4180.78	4292.41	4407.20	4525.37	4647.16	59
60	3665.19	3763.76	3864.64	3967.97	4073.90	4182.62	4294.30	4409.14	4527.37	4649.23	60
Lat.	51°	52°	53°	54°	55°	56°	57°	58°	59°	60°	

Meridional Parts.											(y)
Lat.	61°	62°	63°	64°	65°	66°	67°	68°	69°	70°	
0'	4649.23	4774.98	4904.94	5039.42	5178.81	5323.51	5474.01	5630.82	5794.56	5965.92	0'
1	4651.29	4777.11	4907.14	5041.70	5181.18	5325.97	5476.57	5633.49	5797.35	5968.84	1
2	4653.35	4779.25	4909.35	5043.99	5183.54	5328.43	5479.13	5636.16	5800.14	5971.77	2
3	4655.42	4781.38	4911.55	5046.27	5185.91	5330.90	5481.69	5638.84	5802.94	5974.70	3
4	4657.49	4783.51	4913.76	5048.56	5188.29	5333.36	5484.26	5641.51	5805.74	5977.63	4
5	4659.55	4785.65	4915.97	5050.85	5190.66	5335.83	5486.83	5644.19	5808.54	5980.57	5
6	4661.62	4787.79	4918.18	5053.14	5193.03	5338.30	5489.40	5646.87	5811.34	5983.50	6
7	4663.69	4789.92	4920.39	5055.43	5195.41	5340.77	5491.97	5649.56	5814.15	5986.44	7
8	4665.76	4792.06	4922.60	5057.72	5197.79	5343.24	5494.54	5652.24	5816.95	5989.38	8
9	4667.83	4794.20	4924.81	5060.01	5200.17	5345.71	5497.11	5654.93	5819.76	5992.33	9
10	4669.91	4796.34	4927.03	5062.30	5202.55	5348.18	5499.69	5657.61	5822.57	5995.27	10
11	4671.98	4798.49	4929.24	5064.60	5204.93	5350.66	5502.27	5660.30	5825.39	5998.22	11
12	4674.06	4800.63	4931.46	5066.90	5207.31	5353.14	5504.85	5663.00	5828.20	6001.17	12
13	4676.13	4802.77	4933.68	5069.19	5209.70	5355.61	5507.43	5665.69	5831.02	6004.13	13
14	4678.21	4804.92	4935.90	5071.40	5212.08	5358.09	5510.01	5668.38	5833.84	6007.08	14
15	4680.29	4807.07	4938.12	5073.80	5214.47	5360.58	5512.60	5671.08	5836.66	6010.04	15
16	4682.37	4809.21	4940.34	5076.10	5216.86	5363.06	5515.18	5673.78	5839.48	6013.00	16
17	4684.45	4811.36	4942.57	5078.40	5219.25	5365.55	5517.77	5676.48	5842.31	6015.96	17
18	4686.53	4813.51	4944.79	5080.71	5221.64	5368.03	5520.36	5679.19	5845.13	6018.93	18
19	4688.61	4815.67	4947.02	5083.01	5224.04	5370.52	5522.95	5681.89	5847.96	6021.90	19
20	4690.70	4817.82	4949.24	5085.32	5226.43	5373.01	5525.55	5684.60	5850.79	6024.87	20
21	4692.78	4819.97	4951.47	5087.63	5228.83	5375.50	5528.14	5687.31	5853.63	6027.84	21
22	4694.87	4822.13	4953.70	5089.94	5231.23	5378.00	5530.74	5690.02	5856.47	6030.81	22
23	4696.96	4824.29	4955.94	5092.25	5233.63	5380.49	5533.34	5692.73	5859.31	6033.79	23
24	4699.05	4826.44	4958.17	5094.57	5236.03	5382.99	5535.94	5695.45	5862.15	6036.77	24
25	4701.14	4828.60	4960.40	5096.88	5238.43	5385.49	5538.55	5698.17	5864.99	6039.75	25
26	4703.23	4830.76	4962.64	5099.20	5240.84	5387.99	5541.15	5700.89	5867.84	6042.74	26
27	4705.32	4832.93	4964.88	5101.52	5243.24	5390.49	5543.76	5703.61	5870.69	6045.73	27
28	4707.41	4835.09	4967.11	5103.84	5245.65	5392.99	5546.37	5706.33	5873.54	6048.72	28
29	4709.51	4837.25	4969.35	5106.16	5248.06	5395.50	5548.98	5709.06	5876.39	6051.71	29
30	4711.60	4839.42	4971.59	5108.48	5250.47	5398.01	5551.59	5711.78	5879.24	6054.70	30
31	4713.70	4841.58	4973.83	5110.80	5252.88	5400.52	5554.20	5714.51	5882.10	6057.70	31
32	4715.79	4843.75	4976.08	5113.13	5255.30	5403.03	5556.82	5717.25	5884.96	6060.70	32
33	4717.89	4845.92	4978.32	5115.45	5257.71	5405.54	5559.44	5719.98	5887.82	6063.71	33
34	4719.99	4848.09	4980.57	5117.78	5260.13	5408.05	5562.06	5722.71	5890.68	6066.71	34
35	4722.09	4850.26	4982.82	5120.11	5262.55	5410.57	5564.68	5725.45	5893.55	6069.71	35
36	4724.19	4852.43	4985.06	5122.44	5264.97	5413.08	5567.30	5728.19	5896.41	6072.72	36
37	4726.30	4854.61	4987.31	5124.77	5267.39	5415.60	5569.93	5730.93	5899.28	6075.73	37
38	4728.40	4856.78	4989.56	5127.11	5269.81	5418.12	5572.55	5733.68	5902.15	6078.75	38
39	4730.51	4858.96	4991.82	5129.44	5272.23	5420.64	5575.18	5736.42	5905.03	6081.76	39
40	4732.61	4861.13	4994.07	5131.78	5274.66	5423.17	5577.81	5739.17	5907.90	6084.78	40
41	4734.72	4863.31	4996.32	5134.11	5277.09	5425.69	5580.44	5741.92	5910.78	6087.81	41
42	4736.83	4865.49	4998.58	5136.45	5279.52	5428.22	5583.08	5744.67	5913.67	6090.83	42
43	4738.94	4867.67	5000.84	5138.79	5281.95	5430.75	5585.71	5747.43	5916.55	6093.86	43
44	4741.05	4869.86	5003.10	5141.14	5284.38	5433.28	5588.35	5750.18	5919.44	6096.89	44
45	4743.16	4872.04	5005.36	5143.48	5286.82	5435.81	5590.99	5752.94	5922.33	6099.92	45
46	4745.28	4874.22	5007.62	5145.83	5289.25	5438.35	5593.64	5755.70	5925.22	6102.95	46
47	4747.39	4876.41	5009.88	5148.17	5291.69	5440.88	5596.28	5758.46	5928.11	6105.99	47
48	4749.51	4878.60	5012.15	5150.52	5294.13	5443.42	5598.93	5761.23	5931.00	6109.03	48
49	4751.63	4880.79	5014.41	5152.87	5296.57	5445.96	5601.57	5763.99	5933.90	6112.07	49
50	4753.74	4882.98	5016.68	5155.22	5299.01	5448.50	5604.22	5766.76	5936.80	6115.12	50
51	4755.86	4885.17	5018.94	5157.57	5301.45	5451.05	5606.87	5769.53	5939.70	6118.16	51
52	4757.98	4887.36	5021.21	5159.93	5303.90	5453.59	5609.53	5772.31	5942.61	6121.21	52
53	4760.10	4889.55	5023.48	5162.28	5306.34	5456.14	5612.18	5775.08	5945.51	6124.26	53
54	4762.23	4891.75	5025.76	5164.64	5308.79	5458.68	5614.84	5777.86	5948.42	6127.32	54
55	4764.35	4893.94	5028.03	5167.00	5311.24	5461.23	5617.50	5780.64	5951.33	6130.38	55
56	4766.47	4896.14	5030.30	5169.36	5313.69	5463.78	5620.16	5783.42	5954.24	6133.44	56
57	4768.60	4898.34	5032.58	5171.72	5316.15	5466.34	5622.82	5786.20	5957.16	6136.50	57
58	4770.73	4900.54	5034.86	5174.08	5318.60	5468.89	5625.49	5788.98	5960.08	6139.56	58
59	4772.86	4902.74	5037.14	5176.44	5321.06	5471.45	5628.15	5791.77	5963.00	6142.63	59
60	4774.98	4904.94	5039.42	5178.81	5323.51	5474.01	5630.82	5794.56	5965.92	6145.70	60
Lat.	61°	62°	63°	64°	65°	66°	67°	68°	69°	70°	

Meridional Parts. (y)										
Lat.	71°	72°	73°	74°	75°	76°	77°	78°	79°	80°
0	6145.70	6334.84	6534.42	6745.74	6970.34	7210.07	7467.21	7744.57	8045.71	8375.20
1	6148.77	6338.08	6537.85	6749.37	6974.20	7214.20	7471.66	7749.38	8050.95	8380.96
2	6151.85	6341.32	6541.27	6753.02	6978.07	7218.35	7476.11	7754.20	8056.20	8386.73
3	6154.93	6344.56	6544.70	6756.64	6981.95	7222.49	7480.57	7759.02	8061.46	8392.52
4	6158.01	6347.81	6548.13	6760.28	6985.83	7226.64	7485.03	7763.86	8066.73	8398.31
5	6161.09	6351.06	6551.57	6763.93	6989.71	7230.80	7489.50	7768.70	8072.01	8404.11
6	6164.18	6354.31	6555.01	6767.58	6993.60	7234.96	7493.98	7773.55	8077.29	8409.92
7	6167.27	6357.56	6558.45	6771.23	6997.49	7239.12	7498.46	7778.40	8082.58	8415.74
8	6170.36	6360.82	6561.89	6774.89	7001.38	7243.29	7502.95	7783.26	8087.88	8421.57
9	6173.45	6364.08	6565.34	6778.55	7005.28	7247.47	7507.44	7788.12	8093.19	8427.42
10	6176.55	6367.35	6568.79	6782.21	7009.19	7251.65	7511.94	7793.00	8098.51	8433.27
11	6179.65	6370.61	6572.25	6785.88	7013.10	7255.83	7516.45	7797.88	8103.83	8439.13
12	6182.75	6373.88	6575.70	6789.55	7017.01	7260.02	7520.96	7802.76	8109.17	8445.00
13	6185.85	6377.16	6579.16	6793.22	7020.93	7264.22	7525.47	7807.66	8114.51	8450.88
14	6188.96	6380.43	6582.63	6796.90	7024.85	7268.42	7530.00	7812.56	8119.86	8456.77
15	6192.07	6383.71	6586.10	6800.58	7028.77	7272.62	7534.53	7817.46	8125.22	8462.67
16	6195.18	6386.99	6589.57	6804.27	7032.70	7276.83	7539.06	7822.38	8130.58	8468.58
17	6198.30	6390.28	6593.05	6807.96	7036.64	7281.05	7543.60	7827.30	8135.95	8474.50
18	6201.42	6393.57	6596.52	6811.65	7040.58	7285.27	7548.15	7832.23	8141.33	8480.43
19	6204.54	6396.86	6600.01	6815.35	7044.52	7289.49	7552.70	7837.16	8146.72	8486.37
20	6207.66	6400.15	6603.49	6819.05	7048.47	7293.72	7557.26	7842.10	8152.12	8492.32
21	6210.78	6403.44	6606.98	6822.75	7052.42	7297.96	7561.82	7847.05	8157.53	8498.28
22	6213.91	6406.74	6610.47	6826.46	7056.37	7302.20	7566.39	7852.01	8162.95	8504.25
23	6217.04	6410.05	6613.96	6830.18	7060.33	7306.44	7570.96	7856.97	8168.37	8510.23
24	6220.18	6413.35	6617.46	6833.89	7064.30	7310.69	7575.54	7861.94	8173.80	8516.22
25	6223.31	6416.66	6620.97	6837.61	7068.27	7314.95	7580.13	7866.91	8179.24	8522.22
26	6226.45	6419.97	6624.47	6841.34	7072.24	7319.21	7584.72	7871.90	8184.69	8528.23
27	6229.59	6423.29	6627.98	6845.07	7076.22	7323.47	7589.32	7876.89	8190.15	8534.26
28	6232.74	6426.61	6631.49	6848.80	7080.20	7327.74	7593.93	7881.89	8195.61	8540.29
29	6235.89	6429.93	6635.01	6852.53	7084.19	7332.02	7598.54	7886.89	8201.09	8546.33
30	6239.04	6433.25	6638.53	6856.27	7088.18	7336.30	7603.16	7891.91	8206.57	8552.38
31	6242.19	6436.58	6642.05	6860.02	7092.18	7340.55	7607.78	7896.93	8212.06	8558.45
32	6245.35	6439.91	6645.58	6863.77	7096.18	7344.88	7612.41	7901.95	8217.56	8564.52
33	6248.50	6443.24	6649.11	6867.52	7100.18	7349.18	7617.04	7906.98	8223.07	8570.61
34	6251.67	6446.58	6652.64	6871.27	7104.19	7353.48	7621.68	7912.03	8228.59	8576.70
35	6254.83	6449.92	6656.18	6875.03	7108.21	7357.79	7626.33	7917.08	8234.12	8582.81
36	6258.00	6453.26	6659.72	6878.80	7112.23	7362.10	7630.99	7922.13	8239.66	8588.93
37	6261.17	6456.61	6663.26	6882.56	7116.25	7366.42	7635.65	7927.19	8245.20	8595.06
38	6264.34	6459.95	6666.81	6886.34	7120.28	7370.74	7640.31	7932.26	8250.75	8601.20
39	6267.51	6463.31	6670.36	6890.11	7124.31	7375.07	7644.98	7937.34	8256.31	8607.35
40	6270.69	6466.66	6673.91	6893.89	7128.35	7379.40	7649.66	7942.43	8261.88	8613.51
41	6273.87	6470.02	6677.47	6897.68	7132.39	7383.74	7654.35	7947.52	8267.46	8619.68
42	6277.05	6473.38	6681.03	6901.46	7136.43	7388.08	7659.04	7952.62	8273.05	8625.86
43	6280.24	6476.74	6684.59	6905.25	7140.48	7392.43	7663.74	7957.72	8278.65	8632.05
44	6283.43	6480.11	6688.16	6909.05	7144.54	7396.79	7668.44	7962.84	8284.25	8638.26
45	6286.62	6483.48	6691.73	6912.85	7148.60	7401.15	7673.15	7967.96	8289.87	8644.47
46	6289.82	6486.86	6695.31	6916.65	7152.67	7405.51	7677.87	7973.09	8295.49	8650.70
47	6293.01	6490.23	6698.89	6920.46	7156.74	7409.88	7682.59	7978.23	8301.12	8656.94
48	6296.21	6493.61	6702.47	6924.27	7160.81	7414.26	7687.32	7983.37	8306.77	8663.19
49	6299.42	6497.00	6706.06	6928.09	7164.89	7418.64	7692.05	7988.52	8312.42	8669.45
50	6302.62	6500.38	6709.65	6931.91	7168.97	7423.03	7696.79	7993.68	8318.08	8675.72
51	6305.83	6503.77	6713.24	6935.73	7173.06	7427.42	7701.54	7998.85	8323.75	8682.00
52	6309.04	6507.17	6716.84	6939.56	7177.15	7431.82	7706.30	8004.03	8329.43	8688.29
53	6312.26	6510.56	6720.44	6943.40	7181.25	7436.22	7711.06	8009.21	8335.12	8694.60
54	6315.48	6513.96	6724.04	6947.23	7185.35	7440.63	7715.83	8014.40	8340.82	8700.92
55	6318.70	6517.36	6727.65	6951.07	7189.46	7445.05	7720.60	8019.60	8346.52	8707.25
56	6321.92	6520.77	6731.26	6954.92	7193.57	7449.47	7725.38	8024.81	8352.24	8713.59
57	6325.14	6524.18	6734.88	6958.77	7197.69	7453.89	7730.17	8030.02	8357.96	8719.94
58	6328.37	6527.59	6738.50	6962.62	7201.81	7458.33	7734.96	8035.24	8363.70	8726.30
59	6331.61	6531.01	6742.12	6966.48	7205.94	7462.76	7739.76	8040.47	8369.44	8732.68
60	6334.84	6534.42	6745.74	6970.34	7210.07	7467.21	7744.57	8045.71	8375.20	8739.06
Lat.	71°	72°	73°	74°	75°	76°	77°	78°	79°	80°

Meridional Parts.										(y)
Lat.	81°	82°	83°	84°	85°	86°	87°	88°	89°	
0°	8739.06	9145.46	9605.82	10136.89	10764.62	11532.52	12522.11	13916.43	16299.56	0°
1	8745.46	9152.65	9614.03	10146.46	10776.11	11546.88	12541.27	13945.20	16357.34	1
2	8751.87	9159.86	9622.27	10156.07	10787.65	11561.31	12560.54	13974.22	16416.11	2
3	8758.29	9167.08	9630.52	10165.70	10799.22	11575.80	12579.91	14003.48	16475.90	3
4	8764.73	9174.32	9638.80	10175.37	10810.82	11590.34	12599.40	14033.00	16536.76	4
5	8771.17	9181.57	9647.09	10185.05	10822.47	11604.95	12619.00	14062.77	16598.69	5
6	8777.63	9188.84	9655.40	10194.77	10834.16	11619.62	12638.70	14092.80	16661.78	6
7	8784.10	9196.13	9663.74	10204.51	10845.89	11634.36	12658.53	14123.09	16726.04	7
8	8790.58	9203.42	9672.09	10214.28	10857.65	11649.16	12678.46	14153.66	16791.53	8
9	8797.08	9210.74	9680.47	10224.08	10869.46	11664.02	12698.52	14184.49	16858.29	9
10	8803.58	9218.07	9688.86	10233.90	10881.31	11678.94	12718.69	14215.61	16926.36	10
11	8810.10	9225.41	9697.28	10243.75	10893.20	11693.93	12738.98	14247.01	16995.81	11
12	8816.63	9232.77	9705.71	10253.64	10905.13	11708.99	12759.39	14278.70	17066.70	12
13	8823.17	9240.15	9714.17	10263.54	10917.10	11724.11	12779.92	14310.68	17139.09	13
14	8829.73	9247.54	9722.64	10273.48	10929.11	11739.30	12800.58	14342.97	17213.03	14
15	8836.30	9254.95	9731.14	10283.45	10941.17	11754.56	12821.36	14375.56	17288.57	15
16	8842.88	9262.37	9739.66	10293.45	10953.26	11769.88	12842.26	14408.46	17365.83	16
17	8849.47	9269.81	9748.20	10303.47	10965.40	11785.27	12863.30	14441.68	17444.87	17
18	8856.07	9277.27	9756.76	10313.53	10977.59	11800.73	12884.46	14475.23	17525.77	18
19	8862.69	9284.74	9765.34	10323.61	10989.81	11816.26	12905.75	14509.10	17608.63	19
20	8869.32	9292.23	9773.94	10333.72	11002.08	11831.87	12927.18	14543.31	17693.49	20
21	8875.96	9299.73	9782.57	10343.86	11014.40	11847.54	12948.74	14577.87	17779.53	21
22	8882.62	9307.25	9791.21	10354.03	11026.75	11863.28	12970.44	14612.78	17869.83	22
23	8889.29	9314.79	9799.88	10364.24	11039.15	11879.10	12992.27	14648.04	17961.51	23
24	8895.97	9322.34	9808.57	10374.47	11051.60	11894.99	13014.25	14683.67	18055.70	24
25	8902.66	9329.91	9817.28	10384.73	11064.09	11910.95	13036.36	14719.67	18152.55	25
26	8909.37	9337.49	9826.02	10395.03	11076.63	11926.99	13058.62	14756.05	18252.20	26
27	8916.09	9345.10	9834.77	10405.35	11089.21	11943.10	13081.02	14792.83	18354.83	27
28	8922.82	9352.72	9843.55	10415.71	11101.84	11959.29	13103.58	14830.00	18460.62	28
29	8929.57	9360.35	9852.35	10426.09	11114.52	11975.55	13126.27	14867.57	18569.76	29
30	8936.33	9368.00	9861.17	10436.51	11127.24	11991.89	13149.12	14905.56	18682.49	30
31	8943.10	9375.67	9870.02	10446.96	11140.01	12008.31	13172.13	14943.98	18799.03	31
32	8949.88	9383.36	9878.88	10457.44	11152.82	12024.81	13195.28	14982.83	18919.67	32
33	8956.68	9391.06	9887.77	10467.95	11165.69	12041.39	13218.60	15022.12	19044.69	33
34	8963.49	9398.79	9896.69	10478.50	11178.60	12058.05	13242.07	15061.87	19174.44	34
35	8970.32	9406.53	9905.63	10489.08	11191.56	12074.79	13265.70	15102.08	19309.27	35
36	8977.16	9414.28	9914.59	10499.69	11204.67	12091.60	13289.50	15142.77	19449.61	36
37	8984.01	9422.05	9923.57	10510.33	11217.63	12108.51	13313.47	15183.94	19595.92	37
38	8990.87	9429.84	9932.57	10521.01	11230.74	12125.49	13337.60	15225.62	19748.73	38
39	8997.75	9437.65	9941.60	10531.71	11243.90	12142.57	13361.90	15267.80	19908.66	39
40	9004.65	9445.48	9950.66	10542.45	11257.11	12159.72	13386.37	15310.51	20076.39	40
41	9011.55	9453.32	9959.73	10553.23	11270.37	12176.96	13411.02	15353.76	20252.72	41
42	9018.47	9461.18	9968.83	10564.04	11283.68	12194.29	13435.85	15397.56	20438.59	42
43	9025.41	9469.06	9977.96	10574.88	11297.04	12211.71	13460.86	15441.92	20635.09	43
44	9032.36	9476.96	9987.11	10585.76	11310.46	12229.21	13486.05	15486.86	20843.50	44
45	9039.32	9484.87	9996.28	10596.67	11323.93	12246.81	13511.43	15532.40	21065.37	45
46	9046.29	9492.81	10005.48	10607.62	11337.45	12264.49	13537.00	15578.55	21302.55	46
47	9053.28	9500.76	10014.70	10618.60	11351.02	12282.26	13562.75	15625.32	21557.31	47
48	9060.29	9508.73	10023.95	10629.61	11364.65	12300.13	13588.71	15672.75	21832.48	48
49	9067.31	9516.71	10033.22	10640.67	11378.33	12318.09	13614.85	15720.83	22131.60	49
50	9074.34	9524.72	10042.52	10651.75	11392.06	12336.15	13641.20	15769.59	22459.26	50
51	9081.39	9532.74	10051.84	10662.87	11405.85	12354.30	13667.75	15819.06	22821.46	51
52	9088.45	9540.79	10061.19	10674.03	11419.70	12372.54	13694.52	15869.25	23226.39	52
53	9095.52	9548.85	10070.56	10685.22	11433.60	12390.89	13721.48	15920.19	23685.42	53
54	9102.61	9556.93	10079.96	10696.46	11447.56	12409.33	13748.67	15971.89	24215.35	54
55	9109.72	9565.03	10089.38	10707.72	11461.58	12427.87	13776.07	16024.38	24842.12	55
56	9116.84	9573.15	10098.83	10719.03	11475.65	12446.51	13803.68	16077.68	25509.23	56
57	9123.97	9581.29	10108.30	10730.37	11489.78	12465.26	13831.53	16131.82	26598.21	57
58	9131.12	9589.45	10117.81	10741.75	11503.97	12484.10	13859.60	16186.83	27992.10	58
59	9138.28	9597.62	10127.33	10753.17	11518.21	12503.05	13887.90	16242.74	30374.96	59
60	9145.46	9605.82	10136.89	10764.62	11532.52	12522.11	13916.43	16299.56	Inf.	60
Lat.	81°	82°	83°	84°	85°	86°	87°	88°	89°	

(z) Bearing Amplitude and Time Amplitude at Rising and Setting of the Sun.

Declination.													
Lat.	1°		2°		3°		4°		5°		6°		
	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bear ^s . Ampl.	Time Ampl.	Bear ^s . Ampl.	Time Ampl.	Bear ^s . Ampl.	Time Ampl.	Bear ^s . Ampl.	Time Ampl.	
°	°	h. m.	°	h. m.	°	h. m.	°	h. m.	°	h. m.	°	h. m.	
1	1. 0	0. 0	2. 0	0. 0	3. 0	0. 0	4. 0	0. 0	5. 0	0. 0	6. 0	0. 0	
2	1. 0	0. 0	2. 0	0. 0	3. 0	0. 0	4. 0	0. 1	5. 0	0. 1	6. 0	0. 1	
3	1. 0	0. 0	2. 0	0. 0	3. 0	0. 1	4. 0	0. 1	5. 0	0. 1	6. 0	0. 1	
4	1. 0	0. 0	2. 0	0. 1	3. 0	0. 1	4. 1	0. 1	5. 1	0. 1	6. 1	0. 2	
5	1. 0	0. 0	2. 0	0. 1	3. 0	0. 1	4. 1	0. 1	5. 1	0. 2	6. 1	0. 2	
6	1. 0	0. 0	2. 0	0. 1	3. 1	0. 1	4. 1	0. 2	5. 1	0. 2	6. 2	0. 3	
7	1. 0	0. 0	2. 1	0. 1	3. 1	0. 1	4. 2	0. 2	5. 2	0. 2	6. 3	0. 3	
8	1. 0	0. 1	2. 1	0. 1	3. 2	0. 2	4. 3	0. 2	5. 3	0. 3	6. 4	0. 3	
9	1. 0	0. 1	2. 1	0. 1	3. 2	0. 2	4. 3	0. 3	5. 3	0. 3	6. 5	0. 4	
10	1. 1	0. 1	2. 2	0. 1	3. 3	0. 2	4. 4	0. 3	5. 5	0. 4	6. 6	0. 4	
11	1. 1	0. 1	2. 2	0. 2	3. 3	0. 2	4. 4	0. 3	5. 6	0. 4	6. 7	0. 5	
12	1. 1	0. 1	2. 3	0. 2	3. 4	0. 3	4. 5	0. 3	5. 7	0. 4	6. 8	0. 5	
13	1. 2	0. 1	2. 3	0. 2	3. 5	0. 3	4. 6	0. 4	5. 8	0. 5	6. 10	0. 6	
14	1. 2	0. 1	2. 3	0. 2	3. 5	0. 3	4. 7	0. 4	5. 9	0. 5	6. 11	0. 6	
15	1. 2	0. 1	2. 4	0. 2	3. 6	0. 3	4. 8	0. 4	5. 11	0. 5	6. 13	0. 6	
16	1. 3	0. 1	2. 5	0. 2	3. 7	0. 3	4. 10	0. 5	5. 12	0. 6	6. 14	0. 7	
17	1. 3	0. 1	2. 5	0. 2	3. 8	0. 4	4. 11	0. 5	5. 13	0. 6	6. 16	0. 7	
18	1. 3	0. 1	2. 6	0. 3	3. 9	0. 4	4. 12	0. 5	5. 15	0. 7	6. 19	0. 8	
19	1. 3	0. 1	2. 7	0. 3	3. 10	0. 4	4. 14	0. 6	5. 17	0. 7	6. 21	0. 8	
20	1. 4	0. 1	2. 8	0. 3	3. 12	0. 4	4. 16	0. 6	5. 19	0. 7	6. 23	0. 9	
21	1. 4	0. 2	2. 9	0. 3	3. 13	0. 5	4. 17	0. 6	5. 21	0. 8	6. 25	0. 9	
22	1. 5	0. 2	2. 10	0. 3	3. 14	0. 5	4. 19	0. 6	5. 24	0. 8	6. 28	0. 10	
23	1. 5	0. 2	2. 11	0. 3	3. 15	0. 5	4. 21	0. 7	5. 26	0. 9	6. 31	0. 10	
24	1. 6	0. 2	2. 12	0. 4	3. 17	0. 5	4. 23	0. 7	5. 29	0. 9	6. 34	0. 11	
25	1. 6	0. 2	2. 13	0. 4	3. 19	0. 6	4. 25	0. 7	5. 31	0. 9	6. 37	0. 11	
26	1. 7	0. 2	2. 14	0. 4	3. 21	0. 6	4. 27	0. 8	5. 34	0. 10	6. 41	0. 12	
27	1. 7	0. 2	2. 15	0. 4	3. 22	0. 6	4. 29	0. 8	5. 37	0. 10	6. 44	0. 12	
28	1. 8	0. 2	2. 16	0. 4	3. 24	0. 6	4. 32	0. 9	5. 40	0. 11	6. 48	0. 13	
29	1. 9	0. 2	2. 17	0. 4	3. 26	0. 7	4. 34	0. 9	5. 43	0. 11	6. 52	0. 13	
30	1. 10	0. 2	2. 19	0. 5	3. 28	0. 7	4. 37	0. 9	5. 47	0. 12	6. 56	0. 14	
31	1. 10	0. 2	2. 20	0. 5	3. 30	0. 7	4. 40	0. 10	5. 50	0. 12	7. 0	0. 14	
32	1. 11	0. 2	2. 22	0. 5	3. 33	0. 7	4. 43	0. 10	5. 54	0. 13	7. 5	0. 15	
33	1. 11	0. 3	2. 23	0. 5	3. 35	0. 8	4. 46	0. 10	5. 58	0. 13	7. 10	0. 16	
34	1. 12	0. 3	2. 25	0. 5	3. 37	0. 8	4. 50	0. 11	6. 2	0. 14	7. 15	0. 16	
35	1. 13	0. 3	2. 27	0. 6	3. 40	0. 8	4. 53	0. 11	6. 6	0. 14	7. 20	0. 17	
36	1. 14	0. 3	2. 28	0. 6	3. 43	0. 9	4. 57	0. 12	6. 11	0. 15	7. 25	0. 18	
37	1. 15	0. 3	2. 30	0. 6	3. 45	0. 9	5. 1	0. 12	6. 16	0. 15	7. 31	0. 18	
38	1. 16	0. 3	2. 32	0. 6	3. 48	0. 9	5. 5	0. 13	6. 21	0. 16	7. 37	0. 19	
39	1. 17	0. 3	2. 34	0. 6	3. 52	0. 10	5. 9	0. 13	6. 26	0. 16	7. 44	0. 20	
40	1. 18	0. 3	2. 37	0. 7	3. 55	0. 10	5. 14	0. 13	6. 32	0. 17	7. 51	0. 20	
41	1. 19	0. 3	2. 39	0. 7	3. 59	0. 10	5. 18	0. 14	6. 38	0. 17	7. 58	0. 21	
42	1. 21	0. 4	2. 41	0. 7	4. 2	0. 11	5. 23	0. 14	6. 44	0. 18	8. 5	0. 22	
43	1. 22	0. 4	2. 44	0. 7	4. 6	0. 11	5. 28	0. 15	6. 51	0. 19	8. 13	0. 22	
44	1. 23	0. 4	2. 47	0. 8	4. 10	0. 12	5. 34	0. 15	6. 58	0. 19	8. 21	0. 23	
45	1. 25	0. 4	2. 50	0. 8	4. 15	0. 12	5. 40	0. 16	7. 5	0. 20	8. 30	0. 24	
46	1. 26	0. 4	2. 53	0. 8	4. 19	0. 12	5. 46	0. 17	7. 12	0. 21	8. 39	0. 25	
47	1. 28	0. 4	2. 56	0. 9	4. 24	0. 13	5. 52	0. 17	7. 21	0. 22	8. 49	0. 26	
48	1. 30	0. 4	2. 59	0. 9	4. 29	0. 13	5. 59	0. 18	7. 29	0. 22	8. 59	0. 27	
49	1. 31	0. 5	3. 3	0. 9	4. 35	0. 14	6. 6	0. 18	7. 38	0. 23	9. 10	0. 28	
50	1. 33	0. 5	3. 7	0. 10	4. 40	0. 14	6. 14	0. 19	7. 48	0. 24	9. 21	0. 29	
51	1. 35	0. 5	3. 11	0. 10	4. 46	0. 15	6. 22	0. 20	7. 58	0. 25	9. 34	0. 30	
52	1. 37	0. 5	3. 15	0. 10	4. 52	0. 15	6. 30	0. 21	8. 8	0. 26	9. 46	0. 31	
53	1. 39	0. 5	3. 20	0. 11	4. 59	0. 16	6. 40	0. 21	8. 20	0. 27	10. 0	0. 32	
54	1. 42	0. 5	3. 24	0. 11	5. 7	0. 16	6. 49	0. 22	8. 32	0. 28	10. 15	0. 33	
55	1. 45	0. 6	3. 29	0. 11	5. 14	0. 17	6. 59	0. 23	8. 44	0. 29	10. 30	0. 35	
56	1. 47	0. 6	3. 35	0. 12	5. 22	0. 18	7. 10	0. 24	8. 58	0. 30	10. 46	0. 36	
57	1. 50	0. 6	3. 41	0. 12	5. 31	0. 19	7. 22	0. 25	9. 13	0. 31	11. 4	0. 37	
58	1. 53	0. 6	3. 47	0. 13	5. 40	0. 19	7. 34	0. 26	9. 28	0. 32	11. 22	0. 39	
59	1. 57	0. 7	3. 53	0. 13	5. 50	0. 20	7. 47	0. 27	9. 45	0. 33	11. 43	0. 40	
60	2. 0	0. 7	4. 0	0. 14	6. 0	0. 21	8. 1	0. 28	10. 2	0. 35	12. 4	0. 42	
61	2. 4	0. 7	4. 8	0. 14	6. 12	0. 22	8. 16	0. 29	10. 21	0. 36	12. 27	0. 44	
62	2. 8	0. 8	4. 16	0. 15	6. 24	0. 23	8. 33	0. 30	10. 42	0. 38	12. 52	0. 46	
63	2. 12	0. 8	4. 25	0. 16	6. 37	0. 24	8. 50	0. 32	11. 4	0. 40	13. 19	0. 48	
64	2. 17	0. 8	4. 34	0. 16	6. 51	0. 25	9. 9	0. 33	11. 28	0. 41	13. 48	0. 50	

Bearing Amplitude and Time Amplitude at Rising and Setting of the Sun. (z)												
Declination.												
Lat.	7°		8°		9°		10°		11°		12°	
	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.
	° ' "	h. m.	° ' "	h. m.	° ' "	h. m.	° ' "	h. m.	° ' "	h. m.	° ' "	h. m.
1	7. 0	0. 0	8. 0	0. 1	9. 0	0. 1	10. 0	0. 1	11. 0	0. 1	12. 0	0. 1
2	7. 0	0. 1	8. 0	0. 1	9. 0	0. 1	10. 0	0. 1	11. 0	0. 2	12. 0	0. 2
3	7. 1	0. 1	8. 1	0. 2	9. 1	0. 2	10. 1	0. 2	11. 1	0. 2	12. 1	0. 3
4	7. 1	0. 2	8. 1	0. 2	9. 1	0. 3	10. 2	0. 3	11. 2	0. 3	12. 2	0. 3
5	7. 2	0. 2	8. 2	0. 3	9. 2	0. 3	10. 3	0. 4	11. 3	0. 4	12. 3	0. 4
6	7. 3	0. 3	8. 3	0. 3	9. 3	0. 4	10. 4	0. 4	11. 4	0. 5	12. 4	0. 5
7	7. 4	0. 3	8. 4	0. 4	9. 4	0. 4	10. 5	0. 5	11. 5	0. 5	12. 5	0. 6
8	7. 5	0. 4	8. 5	0. 5	9. 5	0. 5	10. 6	0. 6	11. 7	0. 6	12. 7	0. 7
9	7. 5	0. 4	8. 6	0. 5	9. 7	0. 6	10. 8	0. 6	11. 8	0. 6	12. 9	0. 8
10	7. 7	0. 5	8. 8	0. 6	9. 9	0. 6	10. 10	0. 7	11. 11	0. 8	12. 12	0. 9
11	7. 9	0. 5	8. 9	0. 6	9. 10	0. 7	10. 12	0. 8	11. 13	0. 9	12. 14	0. 9
12	7. 10	0. 6	8. 11	0. 7	9. 12	0. 8	10. 14	0. 9	11. 15	0. 9	12. 16	0. 10
13	7. 11	0. 6	8. 12	0. 7	9. 14	0. 8	10. 15	0. 9	11. 17	0. 10	12. 19	0. 11
14	7. 13	0. 7	8. 15	0. 8	9. 17	0. 9	10. 18	0. 10	11. 20	0. 11	12. 22	0. 12
15	7. 15	0. 8	8. 17	0. 9	9. 19	0. 10	10. 21	0. 11	11. 23	0. 12	12. 25	0. 13
16	7. 17	0. 8	8. 19	0. 9	9. 22	0. 10	10. 24	0. 12	11. 27	0. 13	12. 29	0. 14
17	7. 19	0. 9	8. 22	0. 10	9. 25	0. 11	10. 27	0. 12	11. 30	0. 14	12. 33	0. 15
18	7. 22	0. 9	8. 25	0. 10	9. 28	0. 12	10. 30	0. 13	11. 34	0. 14	12. 38	0. 16
19	7. 24	0. 10	8. 28	0. 11	9. 31	0. 12	10. 34	0. 14	11. 38	0. 15	12. 42	0. 17
20	7. 27	0. 10	8. 31	0. 12	9. 35	0. 13	10. 39	0. 15	11. 43	0. 16	12. 47	0. 18
21	7. 30	0. 11	8. 34	0. 12	9. 39	0. 14	10. 43	0. 16	11. 48	0. 17	12. 52	0. 19
22	7. 33	0. 11	8. 38	0. 13	9. 43	0. 15	10. 48	0. 16	11. 53	0. 18	12. 58	0. 20
23	7. 36	0. 12	8. 42	0. 14	9. 47	0. 15	10. 53	0. 17	11. 58	0. 19	13. 3	0. 21
24	7. 40	0. 13	8. 46	0. 14	9. 52	0. 16	10. 58	0. 18	12. 4	0. 20	13. 9	0. 22
25	7. 44	0. 13	8. 50	0. 15	9. 56	0. 17	11. 3	0. 19	12. 9	0. 21	13. 15	0. 23
26	7. 48	0. 14	8. 55	0. 16	10. 1	0. 18	11. 9	0. 20	12. 15	0. 22	13. 22	0. 24
27	7. 52	0. 14	8. 59	0. 16	10. 6	0. 19	11. 15	0. 21	12. 22	0. 23	13. 29	0. 25
28	7. 56	0. 15	9. 4	0. 17	10. 12	0. 19	11. 21	0. 22	12. 29	0. 24	13. 37	0. 26
29	8. 0	0. 16	9. 9	0. 18	10. 18	0. 20	11. 27	0. 22	12. 36	0. 25	13. 45	0. 27
30	8. 5	0. 16	9. 15	0. 19	10. 24	0. 21	11. 34	0. 23	12. 44	0. 26	13. 53	0. 28
31	8. 10	0. 17	9. 21	0. 19	10. 31	0. 22	11. 41	0. 24	12. 52	0. 27	14. 2	0. 29
32	8. 16	0. 18	9. 27	0. 20	10. 38	0. 23	11. 49	0. 25	13. 0	0. 28	14. 11	0. 31
33	8. 21	0. 18	9. 33	0. 21	10. 45	0. 24	11. 57	0. 26	13. 9	0. 29	14. 21	0. 32
34	8. 27	0. 19	9. 40	0. 22	10. 52	0. 25	12. 5	0. 27	13. 18	0. 30	14. 32	0. 33
35	8. 33	0. 20	9. 47	0. 23	11. 0	0. 25	12. 14	0. 28	13. 28	0. 31	14. 43	0. 34
36	8. 40	0. 20	9. 54	0. 23	11. 9	0. 26	12. 24	0. 29	13. 39	0. 32	14. 54	0. 36
37	8. 47	0. 21	10. 2	0. 24	11. 18	0. 27	12. 34	0. 31	13. 49	0. 34	15. 6	0. 37
38	8. 54	0. 22	10. 11	0. 25	11. 27	0. 28	12. 44	0. 32	14. 1	0. 35	15. 18	0. 38
39	9. 1	0. 23	10. 19	0. 26	11. 37	0. 29	12. 55	0. 33	14. 13	0. 36	15. 31	0. 40
40	9. 9	0. 24	10. 28	0. 27	11. 47	0. 31	13. 6	0. 34	14. 25	0. 38	15. 45	0. 41
41	9. 18	0. 25	10. 38	0. 28	11. 58	0. 32	13. 18	0. 35	14. 39	0. 39	16. 0	0. 43
42	9. 26	0. 25	10. 48	0. 29	12. 9	0. 33	13. 31	0. 37	14. 53	0. 40	16. 15	0. 44
43	9. 35	0. 26	10. 58	0. 30	12. 21	0. 34	13. 44	0. 38	15. 7	0. 42	16. 31	0. 46
44	9. 45	0. 27	11. 9	0. 31	12. 34	0. 35	13. 58	0. 39	15. 23	0. 43	16. 48	0. 47
45	9. 55	0. 28	11. 21	0. 32	12. 47	0. 36	14. 13	0. 41	15. 39	0. 45	17. 6	0. 49
46	10. 6	0. 29	11. 33	0. 33	13. 1	0. 38	14. 29	0. 42	15. 57	0. 46	17. 25	0. 51
47	10. 18	0. 30	11. 47	0. 35	13. 16	0. 39	14. 45	0. 44	16. 15	0. 48	17. 45	0. 53
48	10. 30	0. 31	12. 1	0. 36	13. 31	0. 41	15. 3	0. 45	16. 34	0. 50	18. 6	0. 55
49	10. 42	0. 32	12. 15	0. 37	13. 48	0. 42	15. 21	0. 47	16. 55	0. 52	18. 28	0. 57
50	10. 56	0. 34	12. 30	0. 39	14. 5	0. 44	15. 40	0. 49	17. 16	0. 54	18. 52	0. 59
51	11. 10	0. 35	12. 47	0. 40	14. 24	0. 45	16. 1	0. 50	17. 39	0. 56	19. 18	1. 1
52	11. 25	0. 36	13. 4	0. 41	14. 43	0. 47	16. 23	0. 52	18. 3	0. 58	19. 44	1. 3
53	11. 41	0. 38	13. 22	0. 43	15. 4	0. 49	16. 46	0. 54	18. 29	1. 0	20. 13	1. 6
54	11. 58	0. 39	13. 42	0. 45	15. 26	0. 50	17. 11	0. 56	18. 57	1. 2	20. 43	1. 8
55	12. 16	0. 40	14. 3	0. 46	15. 50	0. 52	17. 37	0. 58	19. 26	1. 4	21. 15	1. 11
56	12. 35	0. 42	14. 25	0. 48	16. 15	0. 54	18. 6	1. 1	19. 57	1. 7	21. 50	1. 13
57	12. 56	0. 44	14. 48	0. 50	16. 42	0. 56	18. 36	1. 3	20. 31	1. 10	22. 26	1. 16
58	13. 18	0. 45	15. 13	0. 52	17. 10	0. 59	19. 8	1. 6	21. 7	1. 12	23. 6	1. 19
59	13. 41	0. 47	15. 41	0. 54	17. 41	1. 1	19. 42	1. 8	21. 44	1. 16	23. 49	1. 23
60	14. 6	0. 49	16. 10	0. 56	18. 14	1. 4	20. 19	1. 11	22. 26	1. 19	24. 34	1. 26
61	14. 34	0. 51	16. 41	0. 59	18. 49	1. 6	20. 59	1. 14	23. 11	1. 22	25. 24	1. 30
62	15. 3	0. 53	17. 15	1. 1	19. 23	1. 9	21. 43	1. 17	23. 59	1. 26	26. 17	1. 34
63	15. 34	0. 56	17. 51	1. 4	20. 9	1. 12	22. 29	1. 21	24. 51	1. 30	27. 15	1. 39
64	16. 8	0. 58	18. 31	1. 7	20. 54	1. 16	23. 20	1. 25	25. 48	1. 34	28. 19	1. 43

(2) Bearing Amplitude and Time Amplitude at Rising and Setting of the Sun.												
Declination.												
Lat.	13°		14°		15°		16°		17°		18°	
	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.
	°	h. m.	°	h. m.	°	h. m.	°	h. m.	°	h. m.	°	h. m.
1	13. 0	0. 1	14. 0	0. 1	15. 0	0. 1	16. 0	0. 1	17. 0	0. 1	18. 0	0. 1
2	13. 0	0. 2	14. 0	0. 2	15. 0	0. 2	16. 1	0. 2	17. 1	0. 2	18. 1	0. 2
3	13. 1	0. 3	14. 1	0. 3	15. 1	0. 3	16. 1	0. 3	17. 2	0. 4	18. 2	0. 4
4	13. 2	0. 4	14. 2	0. 4	15. 2	0. 4	16. 2	0. 5	17. 3	0. 5	18. 3	0. 5
5	13. 3	0. 5	14. 3	0. 5	15. 4	0. 5	16. 4	0. 6	17. 4	0. 6	18. 4	0. 7
6	13. 4	0. 6	14. 4	0. 6	15. 5	0. 6	16. 5	0. 7	17. 5	0. 7	18. 6	0. 8
7	13. 6	0. 6	14. 6	0. 7	15. 7	0. 8	16. 7	0. 8	17. 8	0. 9	18. 8	0. 9
8	13. 8	0. 7	14. 8	0. 8	15. 9	0. 9	16. 10	0. 9	17. 10	0. 10	18. 11	0. 10
9	13. 10	0. 8	14. 10	0. 9	15. 11	0. 10	16. 12	0. 10	17. 13	0. 11	18. 14	0. 12
10	13. 13	0. 9	14. 14	0. 10	15. 15	0. 11	16. 16	0. 12	17. 17	0. 12	18. 18	0. 13
11	13. 15	0. 10	14. 16	0. 11	15. 17	0. 12	16. 18	0. 13	17. 20	0. 14	18. 21	0. 14
12	13. 18	0. 11	14. 19	0. 12	15. 21	0. 13	16. 22	0. 14	17. 23	0. 15	18. 25	0. 16
13	13. 21	0. 12	14. 22	0. 13	15. 24	0. 14	16. 26	0. 15	17. 28	0. 16	18. 30	0. 17
14	13. 24	0. 13	14. 26	0. 14	15. 28	0. 15	16. 30	0. 16	17. 32	0. 17	18. 34	0. 19
15	13. 28	0. 14	14. 30	0. 15	15. 33	0. 16	16. 35	0. 18	17. 37	0. 19	18. 40	0. 20
16	13. 32	0. 15	14. 34	0. 16	15. 37	0. 18	16. 40	0. 19	17. 43	0. 20	18. 45	0. 21
17	13. 36	0. 16	14. 39	0. 17	15. 42	0. 19	16. 45	0. 20	17. 48	0. 21	18. 51	0. 23
18	13. 41	0. 17	14. 44	0. 19	15. 47	0. 20	16. 51	0. 21	17. 54	0. 23	18. 57	0. 24
19	13. 46	0. 18	14. 50	0. 20	15. 53	0. 21	16. 57	0. 23	18. 1	0. 24	19. 5	0. 26
20	13. 51	0. 19	14. 55	0. 21	15. 59	0. 22	17. 4	0. 24	18. 8	0. 26	19. 12	0. 27
21	13. 57	0. 20	15. 1	0. 22	16. 6	0. 24	17. 11	0. 25	18. 15	0. 27	19. 20	0. 29
22	14. 3	0. 21	15. 8	0. 23	16. 13	0. 25	17. 18	0. 27	18. 23	0. 28	19. 28	0. 30
23	14. 9	0. 22	15. 15	0. 24	16. 20	0. 26	17. 26	0. 28	18. 31	0. 30	19. 37	0. 32
24	14. 16	0. 24	15. 22	0. 26	16. 28	0. 27	17. 34	0. 29	18. 40	0. 31	19. 46	0. 33
25	14. 23	0. 25	15. 29	0. 27	16. 36	0. 29	17. 43	0. 31	18. 49	0. 33	19. 56	0. 35
26	14. 30	0. 26	15. 37	0. 28	16. 45	0. 30	17. 52	0. 32	18. 59	0. 34	20. 7	0. 36
27	14. 38	0. 27	15. 45	0. 29	16. 54	0. 31	18. 1	0. 34	19. 9	0. 36	20. 18	0. 38
28	14. 46	0. 28	15. 54	0. 30	17. 3	0. 33	18. 11	0. 35	19. 20	0. 37	20. 29	0. 40
29	14. 54	0. 29	16. 3	0. 32	17. 13	0. 34	18. 22	0. 37	19. 32	0. 39	20. 41	0. 42
30	15. 3	0. 31	16. 13	0. 33	17. 23	0. 36	18. 34	0. 38	19. 44	0. 41	20. 54	0. 43
31	15. 13	0. 32	16. 23	0. 34	17. 34	0. 37	18. 46	0. 40	19. 57	0. 42	21. 8	0. 45
32	15. 23	0. 33	16. 34	0. 36	17. 46	0. 39	18. 58	0. 41	20. 10	0. 44	21. 22	0. 47
33	15. 34	0. 34	16. 46	0. 37	17. 59	0. 40	19. 11	0. 43	20. 24	0. 46	21. 37	0. 49
34	15. 45	0. 36	16. 58	0. 39	18. 12	0. 42	19. 25	0. 45	20. 38	0. 48	21. 53	0. 51
35	15. 57	0. 37	17. 11	0. 40	18. 26	0. 43	19. 40	0. 46	20. 54	0. 49	22. 10	0. 53
36	16. 9	0. 39	17. 24	0. 42	18. 40	0. 45	19. 55	0. 48	21. 11	0. 51	22. 27	0. 55
37	16. 22	0. 40	17. 38	0. 43	18. 55	0. 47	20. 11	0. 50	21. 28	0. 53	22. 46	0. 57
38	16. 35	0. 42	17. 53	0. 45	19. 10	0. 48	20. 28	0. 52	21. 47	0. 55	23. 5	0. 59
39	16. 50	0. 43	18. 8	0. 47	19. 27	0. 50	20. 46	0. 54	22. 6	0. 57	23. 26	1. 1
40	17. 5	0. 45	18. 25	0. 48	19. 45	0. 52	21. 5	0. 56	22. 26	0. 59	23. 47	1. 3
41	17. 21	0. 46	18. 42	0. 50	20. 3	0. 54	21. 25	0. 58	22. 48	1. 2	24. 10	1. 6
42	17. 37	0. 48	19. 0	0. 52	20. 23	0. 56	21. 46	1. 0	23. 10	1. 4	24. 34	1. 8
43	17. 55	0. 50	19. 19	0. 54	20. 43	0. 58	22. 8	1. 2	23. 34	1. 6	25. 0	1. 11
44	18. 13	0. 52	19. 39	0. 56	21. 5	1. 0	22. 32	1. 4	23. 59	1. 9	25. 26	1. 13
45	18. 33	0. 53	20. 0	0. 58	21. 28	1. 2	22. 57	1. 7	24. 25	1. 11	25. 55	1. 16
46	18. 54	0. 55	20. 23	1. 0	21. 53	1. 4	23. 23	1. 9	24. 53	1. 14	26. 25	1. 19
47	19. 16	0. 57	20. 47	1. 2	22. 18	1. 7	23. 50	1. 12	25. 23	1. 17	26. 57	1. 22
48	19. 39	0. 59	21. 12	1. 4	22. 45	1. 9	24. 20	1. 14	25. 54	1. 19	27. 31	1. 25
49	20. 3	1. 2	21. 38	1. 7	23. 14	1. 12	24. 51	1. 17	26. 28	1. 22	28. 6	1. 28
50	20. 29	1. 4	22. 7	1. 9	23. 45	1. 14	25. 24	1. 20	27. 3	1. 25	28. 44	1. 31
51	20. 57	1. 6	22. 37	1. 12	24. 18	1. 17	25. 59	1. 23	27. 41	1. 29	29. 25	1. 35
52	21. 26	1. 9	23. 9	1. 14	24. 52	1. 20	26. 36	1. 26	28. 21	1. 32	30. 7	1. 38
53	21. 57	1. 11	23. 43	1. 17	25. 28	1. 23	27. 16	1. 29	29. 4	1. 36	30. 54	1. 42
54	22. 30	1. 14	24. 18	1. 20	26. 7	1. 27	27. 58	1. 33	29. 50	1. 40	31. 43	1. 46
55	23. 6	1. 17	24. 57	1. 23	26. 50	1. 30	28. 43	1. 37	30. 39	1. 44	32. 36	1. 51
56	23. 43	1. 20	25. 38	1. 27	27. 34	1. 34	29. 32	1. 41	31. 32	1. 48	33. 33	1. 55
57	24. 23	1. 23	26. 22	1. 30	28. 22	1. 37	30. 24	1. 45	32. 28	1. 52	34. 34	2. 0
58	25. 7	1. 27	27. 10	1. 34	29. 14	1. 42	31. 20	1. 49	33. 29	1. 57	35. 40	2. 5
59	25. 54	1. 30	28. 1	1. 38	30. 10	1. 46	32. 21	1. 54	34. 35	2. 2	36. 52	2. 11
60	26. 44	1. 34	28. 56	1. 42	31. 10	1. 51	33. 27	1. 59	35. 47	2. 8	38. 10	2. 17
61	27. 39	1. 38	29. 56	1. 47	32. 16	1. 56	34. 39	2. 5	37. 5	2. 14	39. 36	2. 24
62	28. 38	1. 43	31. 1	1. 52	33. 27	2. 1	35. 57	2. 11	38. 31	2. 20	41. 10	2. 31
63	29. 42	1. 48	32. 12	1. 57	34. 46	2. 7	37. 23	2. 17	40. 5	2. 27	42. 54	2. 38
64	30. 52	1. 53	33. 30	2. 3	36. 11	2. 13	38. 58	2. 24	41. 50	2. 35	44. 49	2. 47

(2) Bearing Amplitude and Time Amplitude at Rising and Setting of the Sun.

Declination.

Lat.	19°		20°		21°		22°		23°		23° 30'		23° 45'	
	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.	Bearing Ampl.	Time Ampl.
°	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
1	19.0	0.1	20.0	0.1	21.0	0.2	22.0	0.2	23.1	0.1	23.31	0.1	23.46	0.2
2	19.1	0.3	20.1	0.3	21.1	0.3	22.1	0.3	23.2	0.3	23.32	0.3	23.47	0.4
3	19.2	0.4	20.2	0.4	21.2	0.5	22.2	0.5	23.3	0.5	23.33	0.5	23.48	0.6
4	19.3	0.6	20.3	0.6	21.3	0.6	22.3	0.6	23.4	0.7	23.34	0.7	23.49	0.8
5	19.4	0.7	20.5	0.7	21.5	0.8	22.5	0.8	23.5	0.9	23.36	0.9	23.51	0.10
6	19.6	0.8	20.7	0.9	21.7	0.9	22.7	0.10	23.8	0.10	23.38	0.10	23.53	0.11
7	19.9	0.10	20.9	0.10	21.10	0.11	22.10	0.11	23.11	0.12	23.41	0.12	23.56	0.13
8	19.12	0.11	20.12	0.12	21.13	0.12	22.14	0.13	23.14	0.14	23.44	0.14	23.59	0.15
9	19.15	0.12	20.16	0.13	21.17	0.14	22.18	0.15	23.18	0.15	23.48	0.15	24.3	0.16
10	19.19	0.14	20.20	0.15	21.21	0.16	22.22	0.16	23.23	0.17	23.53	0.17	24.8	0.18
11	19.22	0.15	20.24	0.16	21.25	0.17	22.26	0.18	23.27	0.19	23.58	0.19	24.13	0.20
12	19.26	0.17	20.28	0.18	21.30	0.19	22.31	0.20	23.33	0.21	24.3	0.21	24.18	0.22
13	19.31	0.18	20.33	0.19	21.35	0.20	22.37	0.21	23.39	0.22	24.9	0.23	24.25	0.23
14	19.36	0.20	20.38	0.21	21.41	0.22	22.43	0.23	23.45	0.24	24.16	0.24	24.32	0.25
15	19.42	0.21	20.44	0.22	21.46	0.24	22.49	0.25	23.51	0.26	24.23	0.26	24.39	0.27
16	19.48	0.23	20.51	0.24	21.53	0.25	22.56	0.27	23.59	0.28	24.30	0.28	24.46	0.29
17	19.54	0.24	20.57	0.26	22.0	0.27	23.4	0.28	24.7	0.30	24.38	0.30	24.54	0.31
18	20.1	0.26	21.5	0.27	22.8	0.29	23.12	0.30	24.15	0.32	24.47	0.32	25.3	0.33
19	20.8	0.27	21.12	0.29	22.16	0.30	23.21	0.32	24.24	0.34	24.56	0.34	25.12	0.35
20	20.16	0.29	21.21	0.30	22.25	0.32	23.30	0.34	24.34	0.36	25.6	0.36	25.22	0.37
21	20.24	0.30	21.30	0.32	22.34	0.34	23.40	0.36	24.45	0.38	25.17	0.38	25.33	0.39
22	20.33	0.32	21.39	0.34	22.44	0.36	23.50	0.38	24.56	0.40	25.28	0.40	25.44	0.41
23	20.43	0.34	21.49	0.36	22.55	0.37	24.1	0.39	25.7	0.42	25.40	0.43	25.57	0.43
24	20.53	0.35	21.59	0.37	23.6	0.39	24.18	0.41	25.19	0.44	25.53	0.45	26.10	0.45
25	21.3	0.37	22.10	0.39	23.18	0.41	24.26	0.43	25.32	0.46	26.6	0.47	26.23	0.47
26	21.14	0.39	22.22	0.41	23.30	0.43	24.38	0.45	25.46	0.48	26.20	0.49	26.37	0.49
27	21.26	0.40	22.34	0.43	23.43	0.45	24.52	0.48	26.1	0.50	26.35	0.51	26.52	0.51
28	21.38	0.42	22.47	0.45	23.57	0.47	25.6	0.50	26.16	0.52	26.51	0.53	27.8	0.54
29	21.51	0.44	23.1	0.47	24.12	0.49	25.22	0.52	26.22	0.54	27.8	0.55	27.25	0.56
30	22.5	0.46	23.16	0.49	24.27	0.51	25.38	0.54	26.49	0.57	27.25	0.58	27.43	0.59
31	22.20	0.48	23.31	0.51	24.43	0.53	25.56	0.56	27.7	0.59	27.44	1.0	28.2	1.1
32	22.35	0.50	23.47	0.53	25.0	0.56	26.13	0.58	27.26	1.1	28.3	1.3	28.21	1.4
33	22.51	0.52	24.4	0.55	25.18	0.58	26.32	1.1	27.46	1.4	28.24	1.5	28.42	1.6
34	23.7	0.54	24.22	0.57	25.37	1.0	26.52	1.3	28.7	1.7	28.45	1.8	29.4	1.9
35	23.25	0.56	24.41	0.59	25.57	1.2	27.13	1.6	28.30	1.9	29.8	1.11	29.27	1.13
36	23.44	0.58	25.1	1.1	26.18	1.5	27.35	1.8	28.53	1.12	29.32	1.14	29.51	1.15
37	24.3	1.0	25.21	1.4	26.40	1.7	27.58	1.11	29.17	1.15	29.57	1.16	30.17	1.17
38	24.24	1.2	25.43	1.6	27.3	1.10	28.23	1.14	29.44	1.17	30.24	1.19	30.44	1.20
39	24.46	1.5	26.7	1.9	27.28	1.12	28.49	1.16	30.11	1.20	30.52	1.22	31.13	1.24
40	25.9	1.7	26.31	1.11	27.54	1.15	29.17	1.19	30.40	1.23	31.22	1.25	31.43	1.27
41	25.33	1.10	26.57	1.14	28.21	1.18	29.46	1.22	31.11	1.27	31.54	1.29	32.15	1.30
42	25.59	1.12	27.24	1.17	28.50	1.21	30.16	1.25	31.43	1.30	32.27	1.32	32.49	1.34
43	26.26	1.15	27.53	1.19	29.20	1.24	30.49	1.29	32.18	1.33	33.3	1.35	33.25	1.37
44	26.55	1.18	28.24	1.22	29.53	1.27	31.23	1.32	32.54	1.37	33.46	1.39	34.3	1.41
45	27.25	1.21	28.56	1.25	30.27	1.30	31.59	1.35	33.33	1.40	34.20	1.43	34.43	1.44
46	27.57	1.24	29.30	1.29	31.3	1.34	32.38	1.39	34.14	1.44	35.2	1.47	35.26	1.48
47	28.31	1.27	30.6	1.32	31.42	1.37	33.19	1.43	34.57	1.48	35.47	1.51	36.12	1.52
48	29.7	1.30	30.44	1.35	32.23	1.41	34.3	1.47	35.44	1.53	36.35	1.56	37.0	1.57
49	29.45	1.33	31.25	1.39	33.6	1.45	34.49	1.51	36.33	1.57	37.26	2.0	37.52	2.1
50	30.26	1.37	32.9	1.43	33.53	1.49	35.38	1.55	37.26	2.2	38.20	2.5	38.48	2.6
51	31.9	1.41	32.55	1.47	34.43	1.53	36.32	2.0	38.23	2.6	39.19	2.9	39.47	2.11
52	31.56	1.45	33.45	1.51	35.36	1.58	37.29	2.5	39.24	2.12	40.22	2.15	40.51	2.17
53	32.45	1.49	34.38	1.56	36.33	2.2	38.30	2.10	40.29	2.17	41.29	2.21	42.0	2.23
54	33.38	1.53	35.35	2.0	37.34	2.8	39.36	2.15	41.40	2.23	42.43	2.27	43.15	2.29
55	34.36	1.58	36.36	2.5	38.40	2.13	40.47	2.21	42.56	2.29	44.3	2.33	44.36	2.35
56	35.36	2.3	37.42	2.11	39.51	2.19	42.4	2.27	44.20	2.36	45.29	2.40	46.4	2.43
57	36.42	2.8	38.54	2.16	41.9	2.25	43.27	2.34	45.51	2.43	47.4	2.48	47.41	2.50
58	37.54	2.14	40.12	2.22	42.33	2.32	44.59	2.41	47.30	2.51	48.48	2.56	49.28	2.59
59	39.12	2.20	41.37	2.29	44.6	2.39	46.40	2.49	49.21	3.0	50.44	3.5	51.26	3.8
60	40.37	2.26	43.10	2.36	45.47	2.47	48.32	2.58	51.24	3.9	52.54	3.15	53.40	3.19
61	42.11	2.34	44.52	2.44	47.40	2.55	50.36	3.7	53.42	3.20	55.20	3.27	56.10	3.30
62	43.55	2.41	46.46	2.53	49.46	3.5	52.56	3.18	56.20	3.32	58.9	3.39	59.5	3.43
63	45.40	2.50	48.53	3.2	52.8	3.16	55.36	3.30	59.23	3.46	61.26	3.55	62.31	3.59
64	47.58	3.0	51.17	3.13	54.50	3.28	58.43	3.44	63.2	4.2	65.27	4.13	66.45	4.18

(z 1) The Time from Noon, at which the True Bearing of the Sun is E. or W.

Declination of the same Name as the Latitude.

Lat.	0°	2°	4°	6°	8°	10°	12°	14°	16°	18°	20°	22°	24°
	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0	6. 0
1	6. 0	4. 0	5. 2	5. 22	5. 31	5. 37	5. 41	5. 44	5. 46	5. 48	5. 49	5. 50	5. 51
2	6. 0	0. 0	4. 0	4. 42	5. 2	5. 14	5. 22	5. 28	5. 32	5. 35	5. 38	5. 40	5. 42
3	6. 0	3. 13	2. 46	4. 0	4. 32	4. 51	5. 3	5. 11	5. 18	5. 23	5. 27	5. 30	5. 33
4	6. 0	4. 0	0. 0	3. 13	4. 1	4. 27	4. 43	4. 55	5. 4	5. 10	5. 16	5. 20	5. 24
5	6. 0	4. 26	2. 28	2. 15	3. 26	4. 1	4. 23	4. 38	4. 49	4. 58	5. 4	5. 10	5. 15
6	6. 0	4. 42	3. 13	0. 0	2. 46	3. 34	4. 1	4. 20	4. 34	4. 45	4. 53	5. 0	5. 5
7	6. 0	4. 54	3. 41	2. 5	1. 56	3. 3	3. 39	4. 2	4. 19	4. 31	4. 41	4. 49	4. 56
8	6. 0	5. 2	4. 1	2. 46	0. 0	2. 29	3. 14	3. 43	4. 3	4. 17	4. 29	4. 39	4. 46
9	6. 0	5. 9	4. 15	3. 14	1. 50	1. 44	2. 47	3. 22	3. 46	4. 3	4. 17	4. 28	4. 37
10	6. 0	5. 14	4. 27	3. 34	2. 29	0. 0	2. 16	3. 0	3. 28	3. 49	4. 4	4. 16	4. 27
11	6. 0	5. 19	4. 36	3. 49	2. 55	1. 40	1. 35	2. 35	3. 9	3. 33	3. 51	4. 5	4. 16
12	6. 0	5. 22	4. 43	4. 1	3. 14	2. 16	0. 0	2. 6	2. 49	3. 17	3. 37	3. 53	4. 0
13	6. 0	5. 25	4. 49	4. 12	3. 30	2. 41	1. 32	1. 29	2. 26	2. 59	3. 23	3. 41	3. 55
14	6. 0	5. 28	4. 55	4. 20	3. 43	3. 0	2. 6	0. 0	1. 58	2. 40	3. 7	3. 28	3. 44
15	6. 0	5. 30	4. 59	4. 28	3. 53	3. 15	2. 30	1. 26	1. 23	2. 18	2. 50	3. 14	3. 32
16	6. 0	5. 32	5. 4	4. 34	4. 3	3. 28	2. 49	1. 58	0. 0	1. 52	2. 32	2. 59	3. 20
17	6. 0	5. 34	5. 7	4. 40	4. 11	3. 39	3. 4	2. 21	1. 21	1. 19	2. 11	2. 43	3. 7
18	6. 0	5. 35	5. 10	4. 45	4. 17	3. 49	3. 17	2. 40	1. 52	0. 0	1. 47	2. 26	2. 53
19	6. 0	5. 37	5. 13	4. 49	4. 24	3. 57	3. 28	2. 54	2. 14	1. 17	1. 16	2. 6	2. 37
20	6. 0	5. 38	5. 16	4. 53	4. 29	4. 4	3. 37	3. 7	2. 32	1. 47	0. 0	1. 43	2. 21
21	6. 0	5. 39	5. 18	4. 56	4. 34	4. 11	3. 46	3. 18	2. 47	2. 9	1. 14	1. 13	2. 2
22	6. 0	5. 40	5. 20	5. 0	4. 39	4. 16	3. 53	3. 28	2. 59	2. 26	1. 43	0. 0	1. 30
23	6. 0	5. 41	5. 22	5. 3	4. 43	4. 22	4. 0	3. 36	3. 10	2. 40	2. 4	1. 11	1. 10
24	6. 0	5. 42	5. 24	5. 5	4. 46	4. 27	4. 6	3. 44	3. 20	2. 53	2. 21	1. 39	0. 0
25	6. 0	5. 43	5. 26	5. 8	4. 50	4. 31	4. 12	3. 51	3. 28	3. 3	2. 35	2. 0	1. 9
26	6. 0	5. 44	5. 27	5. 10	4. 53	4. 35	4. 17	3. 57	3. 36	3. 13	2. 47	2. 16	1. 36
27	6. 0	5. 44	5. 28	5. 12	4. 56	4. 39	4. 21	4. 3	3. 43	3. 22	3. 0	2. 30	1. 56
28	6. 0	5. 45	5. 30	5. 14	4. 59	4. 43	4. 26	4. 8	3. 49	3. 29	3. 7	2. 42	2. 13
29	6. 0	5. 46	5. 31	5. 16	5. 1	4. 46	4. 30	4. 13	3. 55	3. 36	3. 16	2. 53	2. 26
30	6. 0	5. 46	5. 32	5. 18	5. 4	4. 49	4. 34	4. 18	4. 1	3. 43	3. 24	3. 2	2. 38
31	6. 0	5. 47	5. 33	5. 20	5. 6	4. 52	4. 37	4. 22	4. 0	3. 49	3. 31	3. 11	2. 49
32	6. 0	5. 47	5. 34	5. 21	5. 8	4. 54	4. 40	4. 26	4. 11	3. 55	3. 38	3. 19	2. 58
33	6. 0	5. 48	5. 35	5. 23	5. 10	4. 57	4. 44	4. 30	4. 15	4. 0	3. 44	3. 26	3. 7
34	6. 0	5. 48	5. 36	5. 24	5. 12	4. 59	4. 47	4. 33	4. 19	4. 5	3. 49	3. 33	3. 15
35	6. 0	5. 49	5. 37	5. 25	5. 14	5. 2	4. 49	4. 37	4. 23	4. 9	3. 55	3. 39	3. 22
36	6. 0	5. 49	5. 38	5. 27	5. 15	5. 4	4. 52	4. 40	4. 27	4. 14	4. 0	3. 45	3. 29
37	6. 0	5. 49	5. 39	5. 28	5. 17	5. 6	4. 54	4. 43	4. 31	4. 18	4. 4	3. 50	3. 35
38	6. 0	5. 50	5. 39	5. 29	5. 19	5. 8	4. 57	4. 46	4. 34	4. 22	4. 9	3. 55	3. 41
39	6. 0	5. 50	5. 40	5. 30	5. 20	5. 10	4. 59	4. 48	4. 37	4. 25	4. 13	4. 0	3. 47
40	6. 0	5. 50	5. 41	5. 31	5. 21	5. 11	5. 1	4. 51	4. 40	4. 29	4. 17	4. 5	3. 52
41	6. 0	5. 51	5. 42	5. 32	5. 23	5. 13	5. 3	4. 53	4. 43	4. 32	4. 21	4. 9	3. 57
42	6. 0	5. 51	5. 42	5. 33	5. 24	5. 15	5. 5	4. 56	4. 46	4. 35	4. 25	4. 13	4. 1
43	6. 0	5. 51	5. 43	5. 34	5. 25	5. 16	5. 7	4. 58	4. 48	4. 38	4. 28	4. 17	4. 6
44	6. 0	5. 52	5. 43	5. 35	5. 27	5. 18	5. 9	4. 59	4. 51	4. 41	4. 31	4. 21	4. 10
45	6. 0	5. 52	5. 44	5. 36	5. 28	5. 19	5. 11	5. 2	4. 53	4. 44	4. 35	4. 25	4. 14
46	6. 0	5. 52	5. 45	5. 37	5. 29	5. 21	5. 13	5. 4	4. 56	4. 47	4. 38	4. 28	4. 18
47	6. 0	5. 53	5. 45	5. 38	5. 30	5. 22	5. 14	5. 6	4. 58	4. 49	4. 41	4. 31	4. 22
48	6. 0	5. 53	5. 46	5. 38	5. 31	5. 23	5. 16	5. 8	5. 0	4. 52	4. 43	4. 35	4. 25
49	6. 0	5. 53	5. 46	5. 39	5. 32	5. 25	5. 17	5. 10	5. 2	4. 54	4. 46	4. 38	4. 29
50	6. 0	5. 53	5. 47	5. 40	5. 33	5. 26	5. 19	5. 12	5. 4	4. 57	4. 49	4. 41	4. 32
52	6. 0	5. 54	5. 47	5. 41	5. 35	5. 28	5. 22	5. 15	5. 8	5. 1	4. 54	4. 46	4. 39
54	6. 0	5. 54	5. 48	5. 42	5. 37	5. 31	5. 24	5. 18	5. 12	5. 5	4. 59	4. 52	4. 45
56	6. 0	5. 55	5. 49	5. 44	5. 38	5. 33	5. 27	5. 21	5. 15	5. 9	5. 3	4. 57	4. 50
58	6. 0	5. 55	5. 50	5. 45	5. 40	5. 35	5. 29	5. 24	5. 19	5. 13	5. 7	5. 2	4. 55
60	6. 0	5. 55	5. 51	5. 46	5. 41	5. 37	5. 32	5. 27	5. 22	5. 17	5. 11	5. 6	5. 0
62	6. 0	5. 56	5. 51	5. 47	5. 43	5. 38	5. 34	5. 30	5. 25	5. 20	5. 15	5. 10	5. 5
64	6. 0	5. 56	5. 52	5. 48	5. 44	5. 40	5. 36	5. 32	5. 28	5. 24	5. 19	5. 15	5. 10
66	6. 0	5. 56	5. 53	5. 49	5. 46	5. 42	5. 38	5. 35	5. 31	5. 27	5. 23	5. 19	5. 14
68	6. 0	5. 57	5. 54	5. 50	5. 47	5. 44	5. 40	5. 37	5. 33	5. 30	5. 26	5. 22	5. 19
70	6. 0	5. 57	5. 54	5. 51	5. 48	5. 45	5. 42	5. 39	5. 36	5. 33	5. 30	5. 26	5. 23

Equations of Second Differences for 12 Hours.													(x 2)		
Time after Noon or Midnight.			Second Difference.												
			1'	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	
h. m.	h. m.	h. m.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
12. 0	0. 0	0. 0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
11.50	0.10	0.4	0.4	0.8	1.2	1.6	2.1	2.5	2.9	3.3	3.7	4.1	4.5	4.9	
11.40	0.20	0.8	0.8	1.6	2.4	3.2	4.1	4.9	5.7	6.5	7.3	8.1	8.9	9.7	
11.30	0.30	1.2	2.4	3.6	4.8	6.0	7.2	8.4	9.6	10.8	12.0	13.2	14.4	15.6	
11.20	0.40	1.6	3.1	4.7	6.3	7.9	9.4	11.0	12.6	14.2	15.7	17.3	18.9	20.5	
11.10	0.50	1.9	3.9	5.8	7.8	9.7	11.6	13.6	15.5	17.4	19.4	21.3	23.3	25.3	
11. 0	1. 0	2.3	4.6	6.9	9.2	11.5	13.8	16.0	18.3	20.6	22.9	25.2	27.5	29.8	
10.50	1.10	2.6	5.3	7.9	10.5	13.2	15.8	18.4	21.1	23.7	26.3	29.0	31.6	34.3	
10.40	1.20	3.0	5.9	8.9	11.9	14.8	17.8	20.7	23.7	26.7	29.6	32.6	35.6	38.6	
10.30	1.30	3.3	6.6	9.8	13.1	16.4	19.7	23.0	26.3	29.5	32.8	36.1	39.4	42.7	
10.20	1.40	3.6	7.2	10.8	14.4	17.9	21.5	25.1	28.7	32.3	35.9	39.5	43.1	46.6	
10.10	1.50	3.9	7.8	11.6	15.5	19.4	23.3	27.2	31.1	34.9	38.8	42.7	46.6	50.5	
10. 0	2. 0	4.2	8.3	12.5	16.7	20.8	25.0	29.2	33.3	37.5	41.7	45.8	50.0	54.2	
9.50	2.10	4.4	8.9	13.3	17.8	22.2	26.6	31.1	35.5	39.9	44.4	48.8	53.3	57.7	
9.40	2.20	4.7	9.4	14.1	18.8	23.5	28.2	32.9	37.6	42.3	47.0	51.7	56.4	61.1	
9.30	2.30	4.9	9.9	14.8	19.8	24.7	29.7	34.6	39.6	44.5	49.5	54.4	59.4	64.3	
9.20	2.40	5.2	10.4	15.6	20.7	25.9	31.1	36.3	41.5	46.7	51.9	57.0	62.2	67.3	
9.10	2.50	5.4	10.8	16.2	21.6	27.1	32.5	37.9	43.3	48.7	54.1	59.5	64.9	70.3	
9. 0	3. 0	5.6	11.3	16.9	22.5	28.1	33.8	39.4	45.0	50.6	56.3	61.9	67.5	73.1	
8.50	3.10	5.8	11.7	17.5	23.3	29.1	35.0	40.8	46.6	52.4	58.3	64.1	69.9	75.7	
8.40	3.20	6.0	12.0	18.1	24.1	30.1	36.1	42.1	48.1	54.2	60.2	66.2	72.2	78.2	
8.30	3.30	6.2	12.4	18.6	24.8	31.0	37.2	43.4	49.6	55.8	62.0	68.2	74.4	80.6	
8.20	3.40	6.4	12.7	19.1	25.5	31.8	38.2	44.6	50.9	57.3	63.7	70.0	76.4	82.8	
8.10	3.50	6.5	13.0	19.6	26.1	32.6	39.1	45.7	52.2	58.7	65.2	71.7	78.3	84.8	
8. 0	4. 0	6.7	13.4	20.0	26.7	33.3	40.1	46.7	53.3	60.0	66.7	73.3	80.0	86.7	
7.40	4.20	6.9	13.8	20.8	27.7	34.6	41.5	48.4	55.4	62.3	69.2	76.1	83.1	90.0	
7.20	4.40	7.1	14.3	21.4	28.5	35.6	42.8	49.9	57.0	64.2	71.3	78.4	85.6	92.7	
7. 0	5. 0	7.3	14.6	21.9	29.2	36.5	43.8	51.0	58.3	65.6	72.9	80.2	87.5	94.8	
6.40	5.20	7.4	14.8	22.2	29.6	37.0	44.4	51.9	59.3	66.7	74.1	81.5	88.9	96.3	
6.20	5.40	7.5	15.0	22.4	29.9	37.4	44.9	52.3	59.8	67.3	74.8	82.2	89.7	97.1	
6. 0	6. 0	7.5	15.0	22.5	30.0	37.5	45.0	52.5	60.0	67.5	75.0	82.5	90.0	97.5	
Time after Noon or Midnight.			Second Difference.												
			10''	20''	30''	40''	50''	1'	2'	3'	4'	5'	6'	7'	8'
h. m.	h. m.	h. m.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12. 0	0. 0	0. 0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11.50	0.10	0.1	0.1	0.2	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
11.40	0.20	0.1	0.3	0.4	0.5	0.7	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
11.30	0.30	0.2	0.4	0.6	0.8	1.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2
11.20	0.40	0.3	0.5	0.8	1.0	1.3	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
11.10	0.50	0.3	0.6	1.0	1.3	1.6	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3
11. 0	1. 0	0.4	0.8	1.1	1.5	1.9	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3
10.50	1.10	0.4	0.9	1.3	1.8	2.2	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4
10.40	1.20	0.5	1.0	1.5	2.0	2.5	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4
10.30	1.30	0.5	1.1	1.6	2.2	2.7	0.0	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5
10.20	1.40	0.6	1.2	1.8	2.4	3.0	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5
10.10	1.50	0.6	1.3	1.9	2.6	3.2	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.6
10. 0	2. 0	0.7	1.4	2.1	2.8	3.5	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.6
9.50	2.10	0.7	1.5	2.2	3.0	3.7	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7
9.40	2.20	0.8	1.6	2.3	3.1	3.9	0.1	0.2	0.2	0.3	0.4	0.5	0.5	0.6	0.7
9.30	2.30	0.8	1.6	2.5	3.3	4.1	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7	0.7
9.20	2.40	0.9	1.7	2.6	3.5	4.3	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.8
9.10	2.50	0.9	1.8	2.7	3.6	4.5	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.8
9. 0	3. 0	0.9	1.9	2.8	3.8	4.7	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.7	0.8
8.50	3.10	1.0	1.9	2.9	3.9	4.9	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
8.40	3.20	1.0	2.0	3.0	4.0	5.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
8.30	3.30	1.0	2.1	3.1	4.1	5.2	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
8.20	3.40	1.1	2.1	3.2	4.2	5.3	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
8.10	3.50	1.1	2.2	3.3	4.3	5.4	0.1	0.2	0.3	0.4	0.5	0.6	0.8	0.9	1.0
8. 0	4. 0	1.1	2.2	3.3	4.4	5.6	0.1	0.2	0.3	0.4	0.6	0.7	0.8	0.9	1.0
7.40	4.20	1.2	2.3	3.5	4.6	5.8	0.1	0.2	0.3	0.5	0.6	0.7	0.8	0.9	1.0
7.20	4.40	1.2	2.4	3.6	4.8	5.9	0.1	0.2	0.4	0.5	0.6	0.7	0.8	0.9	1.0
7. 0	5. 0	1.2	2.4	3.6	4.9	6.1	0.1	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.0
6.40	5.20	1.2	2.4	3.7	4.9	6.2	0.1	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.1
6.20	5.40	1.3	2.5	3.8	5.0	6.2	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.0	1.1
6. 0	6. 0	1.3	2.5	3.8	5.0	6.3	0.1	0.2	0.4	0.5	0.6	0.7	0.9	1.0	1.1

(z 3) Mean Motion of the Sun's Right Ascension for Sidereal Hours.

Hours.	Motion.	Minutes.	Motion.	Minutes.	Motion.	Seconds.	Motion.
1	0 9.83	1	0.16	31	5.08	3	0.01
2	0 19.66	2	0.33	32	5.24	6	0.02
3	0 29.49	3	0.49	33	5.41	9	0.02
4	0 39.32	4	0.65	34	5.57	12	0.03
5	0 49.15	5	0.82	35	5.73	15	0.04
6	0 58.98	6	0.98	36	5.90	18	0.05
7	1 8.81	7	1.15	37	6.06	21	0.06
8	1 18.64	8	1.31	38	6.22	24	0.06
9	1 28.46	9	1.47	39	6.39	27	0.07
10	1 38.29	10	1.64	40	6.55	30	0.08
11	1 48.12	11	1.80	41	6.72	33	0.09
12	1 57.95	12	1.97	42	6.88	36	0.10
13	2 7.78	13	2.13	43	7.04	39	0.11
14	2 17.61	14	2.29	44	7.21	42	0.11
15	2 27.44	15	2.46	45	7.37	45	0.12
16	2 37.27	16	2.62	46	7.54	48	0.13
17	2 47.10	17	2.78	47	7.70	51	0.14
18	2 56.93	18	2.95	48	7.86	54	0.15
19	3 6.76	19	3.11	49	8.03	57	0.16
20	3 16.59	20	3.28	50	8.19	60	0.16
21	3 26.42	21	3.44	51	8.35		
22	3 36.25	22	3.60	52	8.51		
23	3 46.08	23	3.77	53	8.68		
24	3 55.91	24	3.93	54	8.85		
25	4 5.74	25	4.10	55	9.01		
26	4 15.57	26	4.26	56	9.17		
27	4 25.40	27	4.42	57	9.34		
28	4 35.22	28	4.59	58	9.50		
29	4 45.05	29	4.75	59	9.67		
30	4 54.88	30	4.91	60	9.83		

(z 4) Correction of Mean Refraction.

AA	Bar. +1 in.	Ther. +10°	AA	Bar. +1 in.	Ther. +10°	AA	Bar. +1 in.	Ther. +10°	AA	Bar. +1 in.	Ther. +10°	AA	Bar. +1 in.	Ther. +10°
°	+	—	°	+	—	°	+	—	°	+	—	°	+	—
5	20.10	13.80	23	4.57	2.76	41	2.24	1.34	59	1.17	0.70	77	0.45	0.27
6	17.20	11.50	24	4.35	2.64	42	2.16	1.30	60	1.12	0.67	78	0.41	0.25
7	15.00	9.80	25	4.16	2.52	43	2.09	1.25	61	1.08	0.65	79	0.38	0.23
8	13.30	8.50	26	3.97	2.41	44	2.02	1.20	62	1.04	0.62	80	0.34	0.21
9	11.90	7.60	27	3.81	2.30	45	1.94	1.17	63	0.99	0.60	81	0.31	0.18
10	10.80	6.90	28	3.65	2.19	46	1.88	1.12	64	0.95	0.57	82	0.27	0.16
11	9.80	6.00	29	3.50	2.09	47	1.81	1.08	65	0.91	0.55	83	0.24	0.14
12	9.00	5.56	30	3.36	2.01	48	1.75	1.04	66	0.87	0.52	84	0.20	0.12
13	8.30	5.09	31	3.23	1.93	49	1.69	1.01	67	0.83	0.50	85	0.17	0.10
14	7.70	4.69	32	3.11	1.86	50	1.63	0.97	68	0.79	0.47	86	0.14	0.08
15	7.18	4.39	33	2.99	1.79	51	1.58	0.94	69	0.75	0.45	87	0.10	0.06
16	6.73	4.11	34	2.88	1.73	52	1.52	0.90	70	0.71	0.43	88	0.07	0.04
17	6.31	3.86	35	2.78	1.67	53	1.47	0.88	71	0.67	0.40	89	0.03	0.02
18	5.98	3.62	36	2.68	1.61	54	1.41	0.85	72	0.63	0.38			
19	5.61	3.40	37	2.58	1.55	55	1.36	0.82	73	0.59	0.36			
20	5.31	3.22	38	2.49	1.49	56	1.31	0.79	74	0.56	0.33			
21	5.04	3.05	39	2.40	1.44	57	1.26	0.76	75	0.52	0.31			
22	4.79	2.90	40	2.32	1.39	58	1.22	0.73	76	0.48	0.29			
	—	+		—	+		—	+		—	+		—	+
AA	Bar. —1 in.	Ther. —10°	AA	Bar. —1 in.	Ther. —10°	AA	Bar. —1 in.	Ther. —10°	AA	Bar. —1 in.	Ther. —10°	AA	Bar. —1 in.	Ther. —10°

No. 2.—For Correction of the Mean Refraction.
(Thermometer 50°, and Barometer 30 inches.)

Apparent Altitude.	THERMOMETER.										BAROMETER.				
	Additive.					Subtractive.					Subtractive.				
	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	28·0	28·5	29·0	29·5	30
4° 0'	55	39	26	13	0	11	23	33	45	55	46	35	23	12	0
20	53	38	25	12	0	11	22	32	43	52	44	33	22	11	0
40	50	36	24	12	0	10	21	31	41	50	42	32	21	10	0
5 0	48	35	23	11	0	10	20	30	39	48	40	30	20	10	0
20	46	34	22	11	0	10	19	29	38	46	38	28	19	9	0
40	44	32	21	10	0	9	19	28	36	45	36	27	18	9	0
6 0	42	31	20	10	0	9	18	27	35	43	34	25	17	8	0
20	40	30	19	10	0	9	18	26	34	41	32	24	16	8	0
40	39	29	19	9	0	8	17	25	32	40	31	23	16	8	0
7 0	37	28	18	9	0	8	16	24	31	38	30	22	15	7	0
30	35	26	17	8	0	8	15	23	30	36	28	21	14	7	0
8 0	34	25	16	8	0	7	15	22	28	34	26	20	13	7	0
9 0	31	22	15	7	0	7	13	20	26	31	24	18	12	6	0
10°	28	20	13	6	0	6	12	18	23	29	21	16	11	6	0
11	26	19	12	6	0	6	10	17	22	27	20	15	10	6	0
12	24	17	11	5	0	5	9	15	20	24	18	14	9	5	0
13	22	16	10	5	0	5	9	14	19	23	17	13	9	5	0
14	21	15	10	4	0	4	8	13	17	21	15	12	8	4	0
15	19	14	9	4	0	4	8	12	16	20	14	11	7	4	0
16	18	14	9	4	0	4	7	11	15	19	13	10	7	4	0
18	16	12	8	3	0	3	6	11	14	17	13	10	6	3	0
20	14	11	7	3	0	3	6	9	12	15	11	8	5	3	0
23	13	10	6	3	0	3	5	8	11	13	10	7	4	3	0
25	12	9	6	2	0	2	4	8	10	12	8	7	4	3	0
30	9	7	4	2	0	2	3	6	8	9	7	5	3	2	0
35	8	6	4	2	0	2	3	5	7	8	5	4	3	2	0
40	6	5	3	2	0	1	3	4	5	7	5	3	2	1	0
45	5	4	3	1	0	1	2	4	5	6	4	3	2	1	0
50	4	3	2	1	0	1	2	3	4	5	3	2	2	1	0
55	4	3	2	1	0	1	2	3	3	4	3	2	1	1	0
60	3	2	2	1	0	1	2	2	3	3	2	2	1	1	0
65	3	2	1	1	0	1	1	2	2	2	2	1	0	0	0
70	2	1	1	0	0	0	1	1	2	2	1	1	0	0	0
75	1	1	1	0	0	0	1	1	1	2					
80	1	1	0	0	0	0	0	1	1	1					
											Additive.				
											31·5	31·0	30·5	30	

Correction of Auxiliary Angle for Thermometer and Barometer.

Apparent Altitude.	Factor.	Apparent Altitude.	Factor.	Apparent Altitude.	Factor.	Apparent Altitude.	Factor.
4	·05	24	·25	44	·40	64	·52
6	·07	26	·26	46	·42	66	·53
8	·09	28	·28	48	·43	68	·53
10	·11	30	·30	50	·44	70	·54
12	·13	32	·32	52	·45	72	·54
14	·15	34	·33	54	·47	74	·55
16	·17	36	·36	56	·48	78	·57
18	·19	38	·36	58	·49	82	·57
20	·21	40	·37	60	·50	86	·58
22	·23	42	·39	62	·52		

N.B. To correct Auxiliary Angle, multiply the Factors answering to the Apparent Altitude of each body by the corrections from table for correcting Mean Refraction, and apply the products to the Auxiliary Angle the contrary way to that directed in the Table "For correction of Mean Refraction."

$$\text{Fahrenheit} = \text{Centigr.} \times \frac{9}{5} \pm 32^\circ = \text{Reaumur} \times \frac{9}{4} \pm 32^\circ.$$

THE LOG. DIFFERENCE.

(Log. cos. true alt. - log. cos. app. alt.) + (log. cos. true alt. - log. cos. app. alt.) + 6.301030.

Table (A a).—Moon's App. Alt. *less* than 10°. Barom. 30 inches. Therm. Fahr. 50°.

App. Alt.	Moon's Horizontal Parallax.								Diff. 1' Hor. Parx.	App. Alt.
	54'	55'	56'	57'	58'	59'	60'	61'		
6	6.300349 120	300332 123	300315 125	300297 127	300280 129	300263 131	300246 134	300229 136	17	6
7	300229 120	300209 122	300190 124	300170 126	300151 129	300132 131	300112 133	300093 136	20	7
8	300109 120	300087 122	300065 124	300044 126	300022 128	300001 131	299979 133	299958 136	22	8
9	299939 119	299915 122	299891 124	299867 126	299844 127	299820 131	299796 133	299772 135	24	9

Table (A a).—Moon's App. Alt. *more* than 10°. Barom. 30 inches. Therm. Fahr. 50°.

App. Alt.	Moon's Horizontal Parallax.									Diff. 1' Hor. Parx.	App. Alt.
	53'	54'	55'	56'	57'	58'	59'	60'	61'		
10	6.299897 118	9869 119	9843 121	9817 124	9791 125	9765 127	9739 130	9713 132	9687 134	26	10
11	9779 117	9751 119	9723 121	9694 123	9666 125	9638 127	9610 130	9582 132	9553 133	28	11
12	9662 116	9632 118	9601 120	9571 122	9541 124	9510 126	9480 129	9450 131	9420 133	30	12
13	9546 115	9514 117	9481 119	9449 122	9416 124	9384 126	9351 128	9318 129	9287 133	33	13
14	9431 115	9396 117	9361 119	9327 121	9292 123	9257 126	9223 128	9188 129	9154 133	35	14
15	6.299316 114	9279 117	9242 118	9205 121	9169 123	9132 125	9095 127	9058 129	9021 132	37	15
16	9201 113	9162 116	9124 118	9085 120	9046 122	9007 124	8968 127	8929 128	8890 131	39	16
17	9088 113	9047 116	9006 117	8965 120	8924 122	8882 123	8841 126	8800 128	8759 130	41	17
18	8974 112	8931 115	8888 116	8845 119	8802 121	8759 123	8715 125	8672 127	8629 129	43	18
19	8862 112	8817 114	8772 116	8726 118	8681 120	8636 122	8591 125	8545 126	8500 128	45	19
20	6.298750 111	8703 113	8656 115	8608 117	8561 119	8514 121	8466 123	8419 125	8372 127	48	20
21	8639 110	8590 112	8540 114	8491 116	8442 118	8392 120	8343 122	8294 124	8245 126	50	21
22	8529 109	8478 111	8426 113	8375 115	8323 117	8272 119	8221 121	8169 123	8118 125	52	22
23	8420 109	8366 110	8313 113	8259 114	8206 116	8153 119	8099 120	8046 123	7993 124	54	23
24	8311 107	8256 109	8200 112	8145 113	8090 115	8034 118	7979 120	7923 121	7868 125	56	24
25	6.298204 107	8146 108	8089 111	8031 112	7974 114	7916 116	7859 119	7802 120	7745 123	58	25
26	8097 106	8038 108	7978 110	7919 111	7859 113	7800 115	7740 117	7681 119	7622 122	60	26
27	7991 104	7930 107	7869 109	7807 110	7746 112	7684 114	7623 116	7562 118	7500 120	61	27
28	7887 104	7823 106	7760 107	7697 109	7633 111	7570 113	7507 115	7443 116	7380 119	63	28
29	7783 103	7718 105	7653 107	7588 109	7522 110	7457 113	7392 115	7327 116	7261 118	65	29
30	6.297680 103	7613 105	7546 107	7479 109	7412 110	7344 113	7277 115	7210 116	7143 118	67	30

Alt. 5° 6° 7° 8° 9° 10° 12° 14° 16° 19° 21° 26° 30° 34° 38° 42° 46° 52° 58° 64° 70° 76° 82° 88° Alt.
 ☉ Corr. 14 18 20 21 22 23 23 23 23 23 22 21 20 19 18 17 16 15 14 13 13 12 12 11 ☉ Corr.
 * Corr. 16 20 22 24 25 26 27 28 29 29 30 30 30 30 30 30 30 30 30 30 30 30 30 * Corr.

THE LOG. DIFFERENCE.

Table (A a).—Moon's Alt. more than 30°. Barom. 30 inches. Therm. Fahr. 50°.

☾ App. Alt.	Moon's Horizontal Parallax.									Diff. 1' Parx.	☾ App. Alt.
	53'	54'	55'	56'	57'	58'	59'	60'	61'		
30	6.297680	7613	7546	7479	7412	7344	7277	7210	7143	67	30
	101	104	105	107	109	110	112	114	116		
31	7579	7510	7441	7372	7303	7234	7165	7096	7027	69	31
	100	103	104	105	108	109	111	114	116		
32	7478	7407	7336	7265	7195	7124	7053	6982	6911	71	32
	99	101	103	104	107	108	110	113	115		
33	7379	7306	7233	7160	7088	7015	6942	6869	6796	73	33
	99	100	102	103	106	107	109	110	112		
34	7280	7206	7131	7057	6982	6908	6833	6759	6684	75	34
	97	99	100	102	104	106	108	110	112		
35	6.297183	7107	7031	6954	6878	6802	6725	6649	6572	77	35
	95	98	99	101	103	105	106	108	110		
36	7088	7009	6931	6853	6775	6697	6619	6541	6463	78	36
	94	96	98	100	102	103	105	107	109		
37	6993	6913	6833	6753	6673	6594	6514	6434	6354	80	37
	93	95	97	98	100	102	104	106	108		
38	6900	6818	6736	6655	6573	6492	6410	6328	6246	82	38
	92	94	95	97	99	101	102	103	106		
39	6808	6724	6641	6558	6474	6391	6308	6225	6141	84	39
	91	92	94	96	97	99	101	102	104		
40	6.296717	6632	6547	6462	6377	6292	6207	6122	6037	85	40
	89	91	93	94	96	97	99	101	103		
41	6628	6541	6455	6368	6281	6195	6108	6021	5934	87	41
	88	89	91	93	94	96	98	99	100		
42	6540	6452	6363	6275	6187	6099	6010	5922	5833	89	42
	86	88	89	91	93	95	96	98	98		
43	6454	6364	6274	6184	6094	6004	5914	5825	5735	90	43
	85	87	88	90	91	93	94	97	97		
44	6369	6277	6186	6094	6003	5911	5820	5728	5638	91	44
	84	85	87	88	90	91	93	95	96		
45	6.296285	6192	6099	6006	5913	5820	5727	5634	5542	93	45
	82	83	85	86	88	89	91	92	94		
46	6203	6109	6014	5920	5825	5731	5636	5542	5448	95	46
	80	82	83	85	86	88	89	91	93		
47	6123	6027	5931	5835	5739	5643	5547	5451	5355	96	47
	79	81	82	84	85	87	88	90	90		
48	6044	5946	5849	5751	5654	5556	5459	5361	5265	97	48
	78	79	80	81	83	85	86	87	89		
49	5966	5867	5769	5670	5571	5472	5373	5274	5176	99	49
	76	77	79	80	82	83	84	86	87		
50	6.295891	5790	5690	5590	5489	5389	5289	5188	5089	100	50
	75	75	77	78	79	81	83	83	85		
51	5816	5715	5613	5511	5410	5308	5206	5105	5004	101	51
	72	74	76	76	78	79	80	82	84		
52	5744	5641	5538	5435	5332	5229	5126	5023	4920	103	52
	71	73	74	75	77	78	79	80	82		
53	5673	5568	5464	5360	5255	5151	5047	4942	4838	104	53
	69	70	71	73	74	75	77	77	80		
54	5604	5498	5393	5287	5182	5076	4971	4865	4758	106	54
	68	69	70	71	73	74	76	77	77		
55	6.295536	5429	5323	5216	5109	5002	4895	4788	4681	107	55
	66	67	69	70	71	72	73	74	75		
56	5470	5362	5254	5146	5038	4930	4822	4714	4606	108	56
	64	65	66	67	69	70	71	72	73		
57	5407	5297	5188	5079	4969	4860	4751	4642	4533	109	57
	63	64	65	66	66	68	69	71	72		
58	5344	5234	5123	5013	4903	4792	4682	4571	4461	110	58
	60	62	62	64	65	66	67	68	69		
59	5284	5172	5061	4949	4833	4726	4615	4503	4392	111	59
	59	59	61	62	63	64	66	66	67		
60	6.295225	5113	5000	4887	4775	4662	4549	4437	4325	112	60

Alt. 5° 6° 7° 8° 9° 10° 12° 14° 16° 19° 21° 26° 30° 34° 38° 42° 46° 52° 58° 64° 70° 76° 82° 88° Alt.
 ☉ Corr. 14 18 20 21 22 23 23 23 23 22 21 20 19 18 17 16 15 14 13 13 12 12 11 ☉ Corr.
 * Corr. 16 20 22 24 25 26 27 28 29 29 30 30 30 30 30 30 30 30 30 30 30 30 * Corr.

THE LOG. DIFFERENCE.

Table (A a).—Moon's Alt. more than 60°. Barom. 30 inches. Therm. Fahr. 50°.

App. Alt.	Moon's Horizontal Parallax.									Diff. 1' Par.	App. Alt.
	53'	54'	55'	56'	57'	58'	59'	60'	61'		
•											•
60	6.295225	5113	5000	4887	4775	4662	4549	4437	4325	112	60
	57	58	59	60	61	62	63	64	65		
61	5168	5055	4941	4827	4714	4600	4486	4373	4260	113	61
	55	56	57	58	59	60	61	62	63		
62	5113	4999	4884	4769	4655	4540	4425	4310	4196	115	62
	53	55	56	57	58	59	60	61	62		
63	5060	4944	4828	4713	4597	4481	4366	4250	4134	116	63
	51	52	53	54	55	56	57	58	59		
64	5009	4892	4776	4659	4542	4426	4309	4192	4075	117	64
	50	51	52	53	54	55	56	57	58		
65	6.294959	4841	4724	4606	4489	4371	4254	4136	4018	118	65
	48	49	50	51	52	53	54	55	56		
66	4912	4793	4675	4556	4438	4320	4201	4083	3964	119	66
	46	47	48	49	50	51	52	53	54		
67	4866	4747	4628	4508	4389	4270	4150	4031	3911	120	67
	43	44	45	46	47	48	49	50	51		
68	4823	4703	4583	4462	4342	4222	4102	3982	3861	120	68
	42	43	44	45	46	47	48	49	50		
69	4781	4660	4539	4418	4298	4177	4056	3935	3814	121	69
	40	41	42	43	44	45	46	47	48		
70	6.294741	4620	4498	4377	4255	4133	4012	3890	3769	121	70
	37	39	40	41	42	43	44	45	46		
71	4704	4581	4459	4337	4214	4092	3970	3848	3726	122	71
	36	37	38	39	40	41	42	43	44		
72	4668	4545	4422	4299	4176	4053	3930	3807	3684	123	72
	34	35	36	37	38	39	40	41	42		
73	4634	4510	4387	4263	4140	4016	3892	3769	3646	123	73
	32	33	34	35	36	37	38	39	40		
74	4602	4478	4354	4230	4105	3981	3857	3733	3609	124	74
	30	31	32	33	34	35	36	37	38		
75	6.294572	4448	4323	4198	4073	3949	3824	3699	3574	125	75
	28	29	30	31	32	33	34	35	36		
76	4544	4419	4294	4169	4043	3918	3793	3668	3543	125	76
	25	26	27	28	29	30	31	32	33		
77	4519	4393	4267	4141	4016	3890	3764	3639	3513	126	77
	24	25	26	27	28	29	30	31	32		
78	4495	4369	4243	4116	3990	3864	3738	3612	3486	126	78
	22	23	24	25	26	27	28	29	30		
79	4473	4347	4220	4094	3967	3840	3714	3587	3461	127	79
	20	21	22	23	24	25	26	27	28		
80	6.294453	4327	4200	4073	3946	3819	3692	3565	3438	127	80
	17	18	19	20	21	22	23	24	25		
81	4436	4309	4181	4054	3927	3800	3673	3545	3418	127	81
	16	17	18	19	20	21	22	23	24		
82	4420	4293	4166	4038	3911	3783	3656	3528	3401	128	82
	13	14	15	16	17	18	19	20	21		
83	4407	4279	4151	4024	3896	3768	3640	3513	3386	128	83
	11	12	13	14	15	16	17	18	19		
84	4396	4268	4140	4013	3884	3756	3628	3500	3372	128	84
	10	11	12	13	14	15	16	17	18		
85	6.294386	4258	4130	4002	3874	3746	3617	3489	3361	128	85
	7	8	9	10	11	12	13	14	15		
86	4379	4250	4122	3994	3866	3738	3609	3481	3353	128	86
	5	6	7	8	9	10	11	12	13		
87	4374	4245	4117	3989	3860	3732	3603	3475	3347	129	87
	3	4	5	6	7	8	9	10	11		
88	4371	4242	4114	3985	3857	3729	3600	3472	3344	129	88
	1	2	3	4	5	6	7	8	9		
89	4370	4241	4113	3984	3856	3727	3599	3470	3342	129	89

Alt. 5° 6° 7° 8° 9° 10° 12° 14° 16° 19° 21° 26° 30° 34° 38° 42° 46° 52° 58° 64° 70° 76° 82° 88° Alt.
 ○ Corr. 14 18 20 21 22 23 23 23 23 22 21 20 19 18 17 16 15 14 13 13 12 12 11 ○ Corr.
 * Corr. 16 20 22 24 25 26 27 28 29 29 30 30 30 30 30 30 30 30 30 30 30 30 * Corr

Table (B b). For correcting Log. Differences for Minutes of Altitude and Seconds

Diff. 1° Alt. or 1' Parx.	Minutes of Moon's Altitude or Seconds																							
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
14	14	13	12	12	12	11	11	10	10	9	9	8	8	7	7	7	6	6	5	5	4	4	3	3
16	15	15	14	14	13	13	12	12	11	11	10	10	9	9	8	8	7	7	6	5	5	4	4	3
18	17	17	16	16	15	14	14	13	13	12	11	11	10	10	9	8	8	7	7	6	5	5	4	4
20	19	19	18	17	17	16	15	15	14	13	13	12	11	11	10	9	9	8	7	7	6	5	5	4
22	21	21	20	19	18	18	17	16	15	15	14	13	12	12	11	10	10	9	8	7	7	6	5	4
24	23	22	21	21	20	19	18	17	16	15	14	14	13	12	11	10	10	9	8	7	7	6	5	4
26	25	24	23	23	22	21	20	19	18	17	16	16	15	14	13	12	11	10	9	8	7	7	6	5
28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	7	6	5
30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6
32	31	30	29	28	27	26	25	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7
34	33	32	30	29	28	27	26	25	24	23	22	20	19	18	17	16	15	14	12	11	10	9	8	7
36	35	34	32	31	30	29	28	26	25	24	23	22	20	19	18	17	16	14	13	12	11	10	8	7
38	37	35	34	33	32	30	29	28	27	25	24	23	22	20	19	18	16	15	14	13	11	10	9	8
40	39	37	36	35	33	32	31	29	28	27	25	24	23	21	20	19	17	16	15	13	12	11	9	8
42	41	39	38	36	35	34	32	31	29	28	27	25	24	22	21	20	18	17	15	14	13	11	10	8
44	43	41	39	38	37	35	34	32	31	29	28	26	25	23	22	21	19	18	16	15	13	12	10	9
46	44	43	41	40	38	37	35	34	32	31	29	28	26	25	23	21	20	18	17	15	14	12	11	9
48	46	45	43	42	40	38	37	35	34	32	30	29	27	26	24	22	21	19	18	16	14	13	11	10
50	48	47	45	43	42	40	38	37	35	33	32	30	28	27	25	23	22	20	18	17	15	13	12	10
52	50	49	47	45	43	42	40	38	36	34	33	31	29	28	26	24	23	21	19	17	16	14	12	10
54	52	50	48	47	45	43	41	39	38	36	34	32	31	29	27	25	23	22	20	18	16	14	13	11
56	54	52	50	48	47	45	43	40	39	37	35	34	32	30	28	26	24	22	21	19	17	15	13	11
58	56	54	52	50	48	46	44	43	41	38	37	35	33	31	29	27	25	23	21	19	17	15	14	12
60	58	56	54	52	50	48	46	44	42	40	38	36	34	32	30	28	26	24	22	20	18	16	14	12
62	60	58	56	54	52	50	48	45	43	41	39	37	35	33	31	29	27	25	23	21	19	17	14	12
64	62	60	57	55	53	51	49	47	45	43	41	38	36	34	32	30	28	26	23	21	19	17	15	13
66	64	62	59	57	55	53	51	48	46	44	42	40	37	35	33	31	29	26	24	22	20	18	15	13
68	66	63	61	59	57	54	52	50	48	45	43	41	39	36	34	32	29	27	25	23	20	18	16	14
70	68	65	63	61	58	56	54	51	49	47	44	42	40	37	35	33	30	28	26	23	21	19	16	14
72	70	67	65	62	60	58	55	53	50	48	46	43	41	38	36	34	31	29	26	24	22	19	17	14
74	72	69	66	64	62	59	57	54	52	49	47	44	42	39	37	35	32	30	27	25	22	20	17	15
76	73	71	68	66	63	61	58	56	53	51	48	46	43	41	38	35	33	30	28	25	23	20	18	15
78	75	73	70	68	65	62	60	57	55	52	49	47	44	42	39	36	34	31	29	26	23	21	18	16
80	77	75	72	69	67	64	61	59	56	53	51	48	45	43	40	37	35	32	29	27	24	21	19	16
82	79	77	74	71	68	66	63	60	57	55	52	49	46	44	41	38	36	33	30	27	25	22	19	16
84	81	78	75	73	70	67	64	62	59	56	53	50	48	45	42	39	36	34	31	28	25	22	20	17
86	83	80	77	75	72	69	66	63	60	57	54	52	49	46	43	40	37	34	32	29	26	23	20	17
88	85	82	79	76	73	70	67	65	62	59	56	53	50	47	44	41	38	35	32	29	26	23	21	18
90	87	84	81	78	75	72	69	66	63	60	57	54	51	48	45	42	39	36	33	30	27	24	21	18
92	89	86	83	80	77	74	71	67	64	61	58	55	52	49	46	43	40	37	34	31	28	25	21	18
94	91	88	84	81	78	75	72	69	66	63	60	56	53	50	47	44	41	38	34	31	28	25	22	19
96	93	90	86	83	80	77	74	70	67	64	61	58	54	51	48	45	42	38	35	32	29	26	22	19
98	95	91	88	85	82	78	75	72	69	65	62	59	56	52	49	46	42	39	36	33	29	26	23	20
100	97	93	90	87	83	80	77	73	70	67	63	60	57	53	50	47	43	40	37	33	30	27	23	20
102	99	95	92	88	85	82	78	75	71	68	65	61	58	54	51	48	44	41	37	34	31	27	24	20
104	101	97	93	90	87	83	80	76	73	69	66	62	59	56	52	49	45	42	38	35	31	28	24	21
106	102	99	95	92	88	85	81	78	74	71	67	64	60	57	53	49	46	42	39	35	32	28	25	21
108	104	101	97	94	90	86	83	79	76	72	68	65	61	58	54	50	47	43	40	36	32	29	25	22
110	106	103	99	95	92	88	84	81	77	73	70	66	62	59	55	51	48	44	40	37	33	29	26	22
112	108	105	101	97	93	90	86	82	78	75	71	67	63	60	56	52	49	45	41	37	34	30	26	22
114	110	106	102	99	95	91	87	84	80	76	72	68	65	61	57	53	49	46	42	38	34	30	27	23
116	112	108	104	100	97	93	89	85	81	77	73	70	66	62	58	54	50	46	43	39	35	31	27	23
118	114	110	106	102	98	94	90	87	83	79	75	71	67	63	59	55	51	47	43	39	35	31	28	24
120	116	112	108	104	100	96	92	88	84	80	76	72	68	64	60	56	52	48	44	40	36	32	28	24
122	118	114	110	106	102	98	94	89	85	81	77	73	69	65	61	57	53	49	45	41	37	33	28	24
124	120	116	111	107	103	99	95	91	87	83	79	74	70	66	62	58	54	50	45	41	37	33	29	25
126	122	118	113	109	105	101	97	92	88	84	80	76	71	67	63	59	55	50	46	42	38	34	29	25
128	124	119	115	111	107	102	98	94	90	85	81	77	73	68	64	60	55	51	47	43	38	34	30	26
130	126	121	117	113	108	104	100	95	91	87	82	78	74	69	65	61	56	52	48	43	39	35	30	26
132	128	123	119	114	110	105	101	97	92	88	84	79	75	70	66	62	57	53	48	44	40	35	31	26
134	130	125	120	116	112	107	103	98	94	89	85	80	76	71	67	63	58	54	49	45	40	36	31	27
136	132	127	122	118	113	109	104	100	95	91	86	82	77	72	68	64	59	54	50	45	41	36	32	27

of Parallax (*both additive*).

of Parallax.						Diff. 1° Alt. or 1' Parr.
50	52	54	56	58	60	
2	2	1	1	0	0	14
3	2	2	1	1	0	16
3	2	2	1	1	0	18
3	3	2	1	1	0	20
4	3	2	1	1	0	22
4	3	2	2	1	0	24
4	3	3	2	1	0	26
5	4	3	2	1	0	28
5	4	3	2	1	0	30
5	4	3	2	1	0	32
6	5	3	2	1	1	34
6	5	4	2	1	1	36
6	5	4	3	1	1	38
7	5	4	3	1	1	40
7	6	4	3	1	1	42
7	6	4	3	1	1	44
8	6	5	3	2	1	46
8	6	5	3	2	1	48
8	7	5	3	2	1	50
9	7	5	3	2	1	52
9	7	5	4	2	1	54
9	7	6	4	2	1	56
10	8	6	4	2	1	58
10	8	6	4	2	1	60
10	8	6	4	2	1	62
11	9	6	4	2	1	64
11	9	7	4	2	1	66
11	9	7	5	2	1	68
12	9	7	5	2	1	70
12	10	7	5	2	1	72
12	10	7	5	2	1	74
13	10	8	5	3	1	76
13	10	8	5	3	1	78
13	11	8	5	3	1	80
14	11	8	5	3	1	82
14	11	8	6	3	1	84
14	11	9	6	3	1	86
15	12	9	6	3	1	88
15	12	9	6	3	1	90
15	12	9	6	3	1	92
16	13	9	6	3	2	94
16	13	10	6	3	2	96
16	13	10	7	3	2	98
17	13	10	7	3	2	100
17	14	10	7	3	2	102
17	14	10	7	3	2	104
18	14	11	7	4	2	106
18	14	11	7	4	2	108
18	15	11	7	4	2	110
19	15	11	7	4	2	112
19	15	11	8	4	2	114
19	15	12	8	4	2	116
20	16	12	8	4	2	118
20	16	12	8	4	2	120
20	16	12	8	4	2	122
21	17	12	8	4	2	124
21	17	13	8	4	2	126
21	17	13	9	4	2	128
22	17	13	9	4	2	130
22	18	13	9	4	2	132
22	18	13	9	4	2	134
23	18	14	9	5	2	136

Table (Cc). For correcting Log. Difference for Planet's Altitude.

* App. Alt.	Planet's Horizontal Parallax.															
	2"	4"	6"	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"
7	21	20	20	20	19	18	18	17	17	16	16	15	15	14	14	18
8	23	22	22	21	20	20	19	19	18	17	17	16	15	15	15	14
9	24	23	23	22	21	21	20	19	19	18	18	17	15	15	15	14
10	25	24	23	23	22	21	21	20	19	18	18	17	16	15	15	14
12	26	25	24	23	23	22	21	20	19	18	17	16	16	14	14	13
14	27	26	25	24	23	22	22	20	19	18	17	16	15	14	13	12
16	27	26	25	24	23	21	20	19	18	17	16	14	13	12	11	10
18	27	26	25	23	22	21	20	18	17	16	14	13	12	10	9	8
22	28	26	24	23	21	20	18	17	15	13	12	10	9	7	6	4
26	28	26	24	22	20	18	17	15	13	11	9	7	5	4	2	0
30	27	25	23	21	19	17	15	13	11	9	6	4	2	0	2	4
35	27	25	23	20	17	15	13	11	8	5	3	1	1	4	6	8
40	27	24	22	19	16	14	11	8	5	3	0	3	5	8	11	13
45	27	24	21	18	15	12	9	5	3	1	2	6	9	12	15	18
50	27	24	20	17	14	11	7	4	1	2	5	9	12	15	18	22
60	26	23	19	15	12	8	4	1	3	7	10	14	17	21	25	28
70	26	22	18	14	10	6	2	2	6	10	13	17	21	25	29	33
80	26	22	18	13	9	5	1	3	7	11	16	20	24	28	32	36

The corrections *above* the black line are *additive*, and those *below* subtractive.

Table (Dd). For correcting Log. Difference for the Height of Thermometer and Barometer.

Alt. °	Factor.	Alt. °	Factor.
4	0.2	33	1.2
6	0.3	36	1.3
8	0.3	39	1.4
9	0.4	42	1.5
12	0.5	46	1.6
14	0.6	50	1.7
17	0.7	54	1.8
20	0.8	59	1.9
23	0.9	65	2.0
26	1.0	72	2.1
29	1.1	90	2.1

N.B. To correct Log. Diff., multiply the factors answering to the app. alt. of each body by the corrections from "Table for correcting Mean Refraction," No. 2, page 380, and apply the products to the Log. Diff. as directed in the above No. 2 Table.



LATITUDES AND LONGITUDES OF PLACES ON THE SEABOARD, HARBOURS, CAPES, ISLANDS, REEFS, &c.

* *Light.* ** *Two or more Lights.* *** *Three Lights.*

S.M. Secondary Meridian.

DIRECTORY.

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| <p>I. England, E. Long.
Greenwich to Newhaven.
Nore to Spurn Head.</p> <p>II. England, W. Long.
Brighton—Land's-End—Bristol—Liverpool.
Berwick—Hull.</p> <p>III. Scotland. Edinburgh—Dundee—Aberdeen.
Orkneys—Shetlands—Faroes.
Pentland Skerries—Hebrides—Glasgow.</p> <p>IV. Ireland. Dublin—Wexford—Cork.
Cape Clear—Bantry—Valentia—Limerick.
Galway—Westport—Londonderry—Belfast.</p> <p>V. North Coast of Europe, E. Long.
Belgium—Holland—Denmark—Sweden—Norway.</p> <p>VI. Baltic.
Denmark—Prussia—Russia—Sweden.</p> <p>VII. France.
Calais—Cherbourg—Brest—Bordeaux.
Golfes du Lion—Toulon—Nice.</p> <p>VIII. Spain.
San Sebastian—Corunna—Oporto—Lisbon.
Cadix—Gibraltar—Barcelona—Balearic Isles.</p> <p>IX. Italy. Genoa—Leghorn—Naples.
Sicily—Sardinia, with Corsica—Malta.
Gulf of Tarento—Ancona—Ravenna.</p> | <p>X. Austria—Greece—Turkey—South Russia.</p> <p>XI. Africa. Egypt—Tunis—Algiers—Morocco.
West Coast, with Canaries.
East Coast, with Madagascar—Mauritius—Red Sea.</p> <p>XII. Asia. Turkey—Arabia—Persia.</p> <p>XIII. Asia—continued. India—China.</p> <p>XIV. North Pacific. Japan, and Islands above Equator—West Coast of America, N. Lat.</p> <p>XV. South Pacific. Australia—Tasmania—New Zealand.</p> <p>XVI. South Pacific—continued.
New Zealand—Polynesia—New Hebrides.
Java—Sumatra—Borneo.</p> <p>XVII. North America.
Newfoundland—Canada—Northern States.</p> <p>XVIII. North America—continued.
Southern States—Central America—West Indies.</p> <p>XIX. South America.
Guatemala—Brazil—Windward and Leeward Isles.
Patagonia—Chili—Peru.</p> <p>XX. Arctic—Antarctic Oceans, &c.</p> |
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I. ENGLAND, E. Long.	Lat. N.	Long. E.	ENGLAND, E. Long.	Lat. N.	Long. E.
Greenwich Observatory	51 28.6	0 0	Nore,* Gong	51 29	0 48
Greenhithe, Ferry	51 27.2	0 16.75	Maplin* S.E. Point, Bell.....	51 35	1 3
Sheerness, Flag-staff.....	51 26.8	0 44.75	Inner Gabbard	51 56.8	1 56.0
Chatham, King's Stairs	51 23.8	0 35.0	Outer Gabbard	51 59.0	2 3.5
Nore*.....	51 29	0 48	Walton Tower	51 51.8	1 17.2
Margate,* Church.....	51 23.4	1 28.25	Harwich**	51 56.6	1 17.5
North Foreland*	51 22.5	1 26.75	Landguard Fort	51 56.3	1 19.2
Ramsgate, South Pier*	51 19.7	1 25.5	Orford Steeple	52 5.7	1 32.2
Sandown Castle	51 14.3	1 24.25	Orfordness**.....	52 4.8	1 34.2
Goodwin,* Gong.....	51 18.5	1 35.5	Aldborough Steeple	52 9.2	1 36.0
Gull Stream,* Gong.....	51 16.6	1 29.5	Southwold Church.....	52 19.7	1 40.7
Safety Beacon	51 14.7	1 33.75	Pakefield*	52 26.2	1 43.5
South Sand Head, S. Point,* Gong	51 10.0	1 28.25	Lowestoff**.....	52 29.3	1 45.5
South Foreland**	51 8.4	1 22.5	Yarmouth Spire	52 36.8	1 43.7
Dover Castle*	51 7.8	1 19.5	Winterton*.....	52 43.0	1 41.0
Folkstone*	51 4.8	1 11.0	Hasborough Lights**.....	52 49.4	1 32.0
Dungeness*	50 55.0	0 58.0	Cromer*.....	52 55.7	1 19.0
Rye,** Church	50 57.0	0 43.5	Hunstanton Point*	52 57.1	0 29.7
Hastings**	50 51.5	0 36.0	Lynn's Well*	53 1.7	0 25.0
Beechy Head*	50 44.4	0 12.75	Inner Dowsing, Beacon	53 18.4	0 33.2
Newhaven, West Pier*	50 47	0 4	Spurn Lights**.....	53 34.7	0 7.2

II. ENGLAND, W. Long.		Lat. N.	Long. W.	ENGLAND, W. Long.		Lat. N.	Long. W.
London, St. Paul's Cathedral....	51	30.8	0 5.75	Point of Air,* Bell.....	53	21.9	3 19.0
Brighton Pier*.....	50	49	0 8	N.W.* Light, Bell, Blue Lights.	53	27.4	3 17.75
Shoreham**.....	50	50.3	0 16.0	Formby* Light.....	53	31.0	3 9.5
Selsea Bill, High House.....	50	43.8	0 48.5	Hoylake**.....	53	23.7	3 11.7
Portsmouth Royal Naval College	50	48.0	1 6.25	Bell Beacon.....	53	31.2	3 15.5
Bembridge,* Gong.....	50	42	1 2	Bidston* Light.....	53	24.1	3 4.75
Cowes Castle.....	50	46.0	1 17.75	Leasowe* Light.....	53	24.9	3 7.75
St. Catherine's Point*.....	50	34.5	1 18.0	Black Rock* Light, Bell.....	53	26.7	3 2.75
Needles Light*.....	50	39.9	1 34.0	Liverpool, St. Paul's.....	53	24.6	2 59.5
Southampton, St. Michael's Spire.	50	54	1 24.25	Liverpool Observatory.....	53	24.8	3 0.0
Hurst**.....	50	42.4	1 32.75	Crosby* Light.....	53	31.0	3 4.0
Christchurch.....	50	43.9	1 44.25	Formby, S.E. mark.....	53	32.3	3 4.0
Poole, Branksen Castle.....	50	41.7	1 58.0	Rossall, sea mark.....	53	55.2	3 3.0
St. Alban's Head.....	50	35	2 8	Wyre,* Bell.....	53	57.3	3 1.75
Weymouth,* Jetty Fort.....	50	36.6	2 26.0	Fleetwood**.....	53	55.6	3 1.0
Portland**.....	50	31.4	2 26.75	Lancaster Castle.....	54	3.0	2 48.25
Bridport.....	50	42.7	2 44.5	Walney Isle, South Point*.....	54	2.9	3 10.5
Exmouth.....	50	37	3 23	Isle of Man, Black Comb, 1,919 ft.	54	15.5	3 19.5
Torquay*.....	50	28	3 30	South Point, Calif**.....	54	3.2	4 50.0
Berry Head, Flag-staff.....	50	24	3 28	Castleton*.....	54	4.4	4 39.0
Dartmouth*.....	50	21	3 33	Douglas*.....	54	9.0	4 28.0
Start Point*.....	50	13.4	3 38	North Point, Ayr Point*.....	54	25.0	4 22.0
Prawle Point.....	50	12	3 43	Peel*.....	54	13.6	4 42.0
Salcombe, Fort Charles.....	50	19.3	3 48.0	St. Bees Head*.....	54	30.8	5 38.0
Bolt Head, Flag-staff.....	50	13.2	3 48.75	Whitehaven**.....	54	33.2	3 35.75
Kiddystone*.....	50	10.9	4 16.0	Harrington Pier*.....	54	36.7	3 34.25
Plymouth, Mount Wise, Flag-staff	50	22.0	4 10.25	Workington**.....	54	38.9	3 34.5
„ Breakwater, W. end,* Bell	50	20.3	4 9.5	Maryport, South Pier.....	54	43.0	3 30.5
Rame Head.....	50	19	4 13	Solway Firth,* Bell.....	54	47.7	3 31.75
Fowey, Castle.....	50	19.7	4 38.75	Carlisle Cathedral.....	54	53.8	2 56.0
Falmouth, Pendennis Castle....	50	8.8	5 2.75	Berwick,* Spire.....	55	45.8	1 59.0
„ St. Antony*.....	50	8.3	5 1.0	Holy Island, Castle.....	55	40.2	1 47.0
Lizard,** West Light.....	49	57.7	5 12.0	Farne Island**.....	55	37.0	1 39.25
Penzance,* Pier.....	50	7.1	5 31.5	Longstone Light*.....	55	38.7	1 36.5
Rundlestone Beacon.....	50	1.1	5 40.2	Cheviot Hill.....	55	29	2 9
Bolt Head, Flag-staff.....	50	4.1	5 44.7	N. Sunderland Point, Mill.....	55	34.7	1 38.25
Seven Stones,* Gong.....	50	3	6 7	Coquet Isle*.....	55	20.1	1 32.25
St. Agnes' Light*.....	49	53.6	6 20.75	Blyth*.....	55	7.5	1 30.0
Cape Cornwall.....	50	7.7	5 42.5	Tynemouth*.....	55	1.3	1 25.0
St. Ives Church.....	50	12.8	5 26.5	North Shields Church.....	55	0.7	1 26.75
Trevoose Head**.....	50	33	5 2	Newcastle, Bridge, North end..	54	58.7	1 35.5
Padstow Church.....	50	32.5	4 56.0	Sunderland, Pier**.....	54	54.5	1 21.5
Tintagel Church.....	50	39.8	4 45.5	Hartlepool, Pier**.....	54	41.8	1 10.75
Hartland Point.....	51	1.4	4 31.5	Seaton, High*.....	54	40.3	1 12.25
Lundy Isle**.....	51	10.1	4 40.25	Tees River, Bran Sand**.....	54	37.1	1 8.75
Bideford Lights**.....	51	4.5	4 12.0	Stockton, Church.....	54	34.0	1 18.75
Mort Point.....	51	11.4	4 13.75	Redcar, Church.....	54	36.9	1 3.5
Ilfracombe*.....	51	12.8	4 7.0	Whitby*.....	54	29.7	0 36.75
Burnham Lights**.....	51	15.0	3 0.0	Scarborough*.....	54	17.0	0 23.5
Flatholm Isle, South Point*.....	51	22.6	3 7.0	Flamborough Head*.....	54	7.0	0 5.0
Bristol Cathedral.....	51	26.8	2 35.5	Bridlington Quay, Mill.....	54	5.2	0 11.75
Newport, Oak Light*.....	51	32.4	2 59.75	Hull Citadel.....	53	44.6	0 20.0
Cardiff Custom-House.....	51	28.6	3 10.0	Killingholme,** Outer Light..	53	38.7	0 12.7
Nash Point**.....	51	24.0	3 33.0	Channel Islands.			
Mumbles*.....	51	34.0	3 58.25	Alderney, St. Anne's Church...	49	42.9	2 12.25
Swansea Pier*.....	51	37.0	3 56.0	Pierre au Vrack, Rock.....	49	41.6	2 17.0
Worms Head.....	51	34	4 20	Caskets,** Bell.....	49	43.4	2 22.5
St. Govan's Head.....	51	35.8	4 55.5	Guernsey, Jerbourg Tower.....	49	25.3	2 33.0
St. Ann's Lights**.....	51	41.0	5 10.5	Pleinmont, S.W. Point, Guard Ho.	49	25.3	2 41.0
Milford Church.....	51	42.7	5 1.5	St. Pierre,* South Jetty.....	49	27.0	2 33.0
Pembroke Dock Yard, N.W. Corner	51	41.8	4 57.25	Fort Doyle, N.E. Point.....	49	30.1	2 31.25
St. David's Cathedral.....	51	52.9	5 16.0	Herm Island, Mill.....	49	28.0	2 27.75
Strumble Head.....	52	1.7	5 3.5	Sark, Telegraph.....	49	25.5	2 22.75
Cardigan Steeple.....	52	5.2	4 39.5	Etat de Sark.....	49	23.6	2 23.0
Aberystwith* Castle.....	52	24.9	4 5.25	Jersey, St. Pierre, Church.....	49	12.5	2 11.75
Cader Idris, 3,549 feet.....	52	42.0	3 54.5	St. Helier's**.....	49	11.3	2 7.0
Bardsey Isle*.....	52	45.0	4 48.0	C. Grosez, Ruin.....	49	15.2	2 15.5
Snowdon, 3,580 feet.....	53	4.1	4 4.5	N.E. Point, or Point De la Coupe	49	13.9	2 2.3
Caernarvon*.....	53	8.5	4 24.7	S.E. Point, Seymour Tower.....	49	9.4	2 1.1
South Stack*.....	53	18.3	4 42.0	Roches Douvres.....	49	6.5	2 49
Holyhead,* Bell.....	53	20.0	4 37.0	Barnouic Rocks.....	49	1	2 48
Skerries*.....	53	25.3	4 36.5	Chansey Isles, Great Isle*.....	48	52.2	1 49.25
Port Lynas*.....	53	25.0	4 17.25	Minquiers Rocks.....	48	59	2 19
Great Orme's Head, Signal-staff..	53	20.0	3 51.25				

III. SCOTLAND.	Lat. N.	Long. W.	SCOTLAND.	Lat. N.	Long. W.
Berwick *	55 46.2	2 0.0	Bard Head	60 6.1	1 4.5
Eyemouth, Church	55 52.3	2 5.5	Moussa Isle Summit	60 0	1 11
St. Abb's Head, Signal Station	55 55	2 8	Sunburgh Head *	59 51.3	1 17.0
Dunbar, Church	55 59.9	2 31.0	Fair Isle	59 33	1 38
Bass Rock	56 4.7	2 38.2	Faroes —Thorshaven, Hill N. of Ft.	62 0.7	6 45.25
North Berwick, Church	56 3.4	2 43.25	Nalsoe Island, North Point	62 39	6 41
Inch Keith *	56 2.0	3 8.0	Fugloe Island, East Point	62 20	6 13
Edinburgh Observatory	55 57.4	3 11.0	Waderoe Island, North Point	62 24	6 31
Leith Pier *	55 58.9	3 10.5	Myggenoes, Western extremity	62 6	7 37
May Island **	56 11.1	2 33.25	Great Diamond	61 43	6 40
Fife Ness, Flag-staff	56 16.7	2 35.0	Suderoe Island	61 25	6 41
St. Andrew's, Church	56 20.4	2 47.5	Monk Rock	61 20	6 41
Bell Rock * Bell	56 26.0	2 23.0	Pentland Skerries * N. Point	58 41.2	2 55.0
Dundee **	56 27.6	2 57.75	Duncansby Head	58 39	3 1
Port-on-Craig **	56 27	2 49	Dunnet Head *	58 40.4	3 21.25
Buddon Ness **	56 28.1	2 45.0	Holburn Head	58 35	3 31
Arbroath, * Abbey	56 33.7	2 35.0	Thurso	58 33	3 31
Red Head	56 37	2 29	Strathly Head	58 36.0	4 9.5
Montrose **	56 42.5	2 28.0	Roan Island, middle	58 33.3	4 19.25
Stonehaven **	56 58.0	2 12.75	Far-out Head	58 36.2	4 45.0
Girdle Ness *	57 8.2	2 3.0	Cape Wrath *	58 37.5	4 59
Aberdeen ** Observatory	57 8.9	2 5.75	Bulgie Island	58 33	5 7
Buchan Ness *	57 28	1 46	Handa Isle	58 23.0	5 11.75
Peterhead, Keith Inch	57 30.1	1 46.0	Ru Stoer	58 16	5 22
Rattray Point	57 37	1 49	Ru Coygach	58 6	5 26
Fraserburgh **	57 41.9	2 0.0	Rea Head	57 54	5 33
Kinnaird's Head *	57 41.7	2 1.5	Point of Aird	57 39	6 18
Troup Head, Point	57 41.7	2 17.25	Dunvegan Head	57 32	6 41
Banff Pier *	57 40.3	2 31.5	Copnashow Head	57 18	6 43
Cullen, Castle Hill	57 41.4	2 49.5	Canna Island, West Point	57 4	6 34
Coversea Skerries *	57 43.4	3 20.25	Rum Isle, South Point	56 56	6 23
Burgh Head	57 42.1	3 30.0	West Point	57 0	6 30
Inverness Gaol	57 28.6	4 13.5	Hebrides —Barra Head *	56 47.1	7 39.25
Chanonry Point *	57 34.5	4 5.5	Barra Isle, North Point	57 2	7 34
Fort George	57 35.1	4 4.5	Eris Kay	57 3	7 16
Cromarty Point *	57 41.0	4 2.0	South Uist, West Point	57 9	7 35
Tarbet Ness *	57 50.9	3 48.5	Stornaway *	58 11.5	6 22.25
Tain, Spire	57 48.7	4 3.2	Tiompan Head	58 15	6 12
Ord of Caith Ness, Needle	58 10.2	2 31.0	Butt of Lewis	58 31	6 14
Noss Head *	58 28	3 4	Gallen Head	58 14	7 2
Orkneys —South Point, or Brimnes	58 46.4	3 13.5	Scarp, West Point	57 59	7 9
Stour Roray	58 52.4	3 25.5	Flannan Isles, N.W. extremity	58 13	7 37
Saquooy Head	59 12.0	3 4.25	St. Kilda Peak	57 49.0	8 34.75
Noup Head	59 20.0	3 4.0	Glass Island *	57 52	6 33
Moul Head	59 23.0	2 53	Coll Isle, North and East Point	56 42	6 27
Stromness, S. Pt. of N. Ronaldsay	59 20	2 26	Tirey Isle, South extremity	56 27	6 56
North Ronaldsay Isle, East Point	59 23	2 24	Ben More, 3,168 feet	56 25.5	6 0.75
Tafts Ness	59 18	2 25	Isle of Mull, North-West Point	56 36	6 20
Start Light	59 16.6	2 22.0	Iona, West Point	56 19	6 29
Sanday Isle, Tresness	59 13	2 28.5	Ben Nevis, 4,368 feet	56 48	5 0
Stronsa Isle, Lamb Head	59 4.9	2 32.0	Fort William	56 48	5 5
Auskery Isle	59 2	2 34	Lismore Island *	56 27	5 36
Copinsha Isle	58 54	2 40	Oban Free Church	56 25.9	5 31.75
Strom Ness, Church	58 57.8	3 17.5	Colonsay, North Point	56 8	6 10
Brough of Birsay	59 8.2	3 20.0	Rhinns of Isla, Oersa Isle *	55 40	6 31
Kirkwall *	58 59.2	2 57.25	Mull of Oe, South extremity	55 35	6 18
Shetlands —Foul Isle	60 9	2 6	Ben Tuirich, 1,516 feet	55 34	5 34
Fitfield Head	59 54	1 24	Mull of Cantyre *	55 20	5 49
Skelda Ness	60 8.8	1 28.0	Campbelton *	55 25.0	5 35.5
Ve Skerries	60 22.5	1 49	Glasgow New Bridge	55 51.9	4 16
Fugloe Skerry	60 20.4	1 45.0	Port Glasgow, Basin	55 56.2	4 41
Esha Ness Skerry	60 28.5	1 37.25	Greenock Spire	55 56.9	4 45.25
Ossa Skerry	60 33.0	1 35.5	Cumbræ *	55 43	4 59.7
Roeness Hill	60 32	1 27	Ardrossan **	55 38.7	4 50.5
Uya, N.E. Point	60 37	1 26	Pladda Lights **	55 25.6	5 7.0
Gloup Holm, Summit	60 44.2	1 6.5	Ailsa Craig	55 15.2	5 7.0
N. exterior Outer Stack Rock	60 51.5	0 52.5	Ayr ***	55 28	4 38
Balta Island, South Point	60 44.4	0 47.75	Stranraer Church	54 54.5	5 2.0
Fetlar Island, East Point	60 36.2	0 46.0	Lough Ryan *	54 58.5	5 1.75
Burra Voe Ness	60 29.5	1 2.0	Corsall Point *	55 0.5	5 9.5
Brury Isle, North Summit	60 25.7	0 45.0	Port Patrick *	54 50.3	5 6.75
Halsey Island, South Summit	60 20	1 0	Mull of Galloway *	54 38.1	4 51.25
Noss Head	60 8.3	1 0.5	Burrow Head	54 41	4 23
Lerwick Fort	60 9.4	1 8.75	Annan, Church	54 59.2	3 15.5

IV. IRELAND.		Lat. N.	Long. W.	IRELAND.		Lat. N.	Long. W.
Dublin Observatory	53° 23' 2"	8° 20' 25"		Galway, Mutton Island Light *	53° 15' 2"	9° 3' 67"	
Kingstown, East Light *	53° 18' 2"	6° 7' 5"		Skird Rocks, Outer	53° 15'	10° 2'	
Kish Light, * Gong	53° 19' 0"	5° 56' 5"		Slyne Head *	53° 24' 0"	10° 14' 16"	
Great Sugar-loaf	53° 8' 2"	6° 9' 0"		Shark Head	53° 36'	10° 29'	
Wicklow Black Castle	52° 58' 8"	6° 2' 0"		Clare Island, North Point *	53° 49' 5"	9° 59'	
Wicklow Head **	52° 57' 9"	6° 0' 0"		Innisgort *	53° 49' 5"	9° 41'	
Arklow Church	52° 47' 8"	6° 9' 25"		Westport	53° 48'	9° 31'	
Arklow Light, * Gong	52° 42' 0"	5° 59' 75"		Newport	53° 53'	9° 33'	
Cahore Point	52° 34'	6° 12'		Bills Rock	53° 53'	10° 11'	
Wexford, Rosslare Pt., Coast Guard	52° 19' 9"	6° 22' 25"		Achill Head, 2,222 feet	53° 58'	10° 16'	
Wexford College, Tower	52° 20' 1"	6° 28' 25"		Black Rock	54° 4'	10° 21'	
Tuskur Rock, * Bell	52° 12' 1"	6° 12' 25"		Eagle Island **	54° 17'	10° 6'	
Greenmore Point	52° 15'	6° 20'		Erris Head	54° 17'	10° 0'	
Carnsore Point	52° 10' 3"	6° 21' 75"		Stag Rocks, Northernmost	54° 22'	9° 48'	
Saltees or Kennibeg, * Gong	52° 2' 8"	6° 40' 0"		Downpatrick Head	54° 20'	9° 21'	
Hook Light *	52° 7' 4"	6° 55' 75"		Killala	54° 11'	9° 13'	
Waterford Bridge	52° 16'	7° 6'		Ballina Spire	54° 6' 6"	9° 9' 67"	
Duncannon Fort **	52° 13' 7"	6° 56' 5"		Black Rock *	54° 18'	8° 37'	
Dunmore Pier *	52° 9'	6° 59'		Sligo Bridge	54° 16'	8° 28'	
Brownston Head	52° 7'	7° 7'		Innis Murray Island	54° 26'	8° 40'	
Helwick Head	52° 3'	7° 33'		Ballyshannon, Church	54° 30' 2"	8° 11' 9"	
Dungarvan Pier	52° 5'	7° 38'		Donegal	54° 39'	8° 7'	
Clonmell	52° 22'	7° 44'		Enniskillen	54° 21'	7° 40'	
Youghal *	51° 57'	7° 52'		St. John's Point, * Killibeg's Light	54° 34'	8° 28'	
Roche Point *	51° 47' 5"	8° 15' 25"		Rathlin O' Birne *	54° 40'	8° 50'	
Haulbowline I. Tower	51° 50' 5"	8° 18' 25"		Teelen Head	54° 40'	8° 45'	
Cork Custom-house	51° 53' 8"	8° 27' 75"		Daurus Head Point	54° 49' 6"	8° 34' 16"	
Barry Head	51° 42' 1"	8° 23' 25"		N. Arran Island, N.W. Point	55° 1' 4"	8° 34' 16"	
Charles Fort, Flag Staff	51° 41' 8"	8° 29' 75"		Stag Rocks	55° 4' 6"	8° 29' 16"	
Kinsale Old Head *	51° 36' 7"	8° 32' 25"		Bloody Foreland Hill	55° 8' 2"	8° 15' 9"	
Seven Heads, Telegraph	51° 34' 2"	8° 42' 75"		Tory I., * Light on N. and W. Point	55° 16' 5"	8° 15' 16"	
Galley Head, South Point	51° 31' 8"	8° 57' 0"		Horn Head, East Summit	55° 12' 5"	7° 57'	
Stags, off Toe Head	51° 28' 1"	9° 13' 5"		Melmore Point, Tower	55° 15' 2"	7° 47' 0"	
Baltimore	51° 29'	9° 22'		Limeburner Shoal	55° 18'	7° 48'	
Cape Clear, South-East Point	51° 26'	9° 29'		Fannet Point *	55° 16' 6"	7° 37' 7"	
Fastnet Rock *	51° 23' 3"	9° 36' 6"		Buncrana Church	55° 8' 1"	7° 27' 25"	
Crookhaven *	51° 28' 6"	9° 42' 6"		Dunaff Head	55° 17' 1"	7° 32'	
Mizen Head	51° 27'	9° 50'		Malin Head Tower	55° 22' 8"	7° 22' 25"	
Sheep Head	51° 33'	9° 52'		Innistrahul Light *	55° 25' 9"	7° 13' 7"	
Bear Haven, Bear Island, Summit	51° 37' 5"	9° 52' 4"		Slieve Sneacht, 2,239 feet	55° 12'	7° 20'	
Hungry Hill	51° 41'	9° 48'		Innishowen Head **	55° 13' 8"	6° 55' 5"	
Bantry Church	50° 40' 8"	9° 27' 4"		Londonderry Bridge	54° 59' 6"	7° 19'	
Roanharick Island *	51° 39' 2"	9° 44' 9"		Portrush Pier	55° 12' 4"	6° 39' 7"	
Creagh Rocks	51° 32'	10° 10'		Giants' Causeway Point	55° 14' 7"	6° 36' 75"	
Calf Rock	51° 34'	10° 16'		Rachlin Island, * Church	55° 17' 6"	6° 11' 7"	
Bull Rock	51° 36'	10° 18'		Fair Head	55° 13' 3"	6° 8' 7"	
Cod's Head	51° 40'	10° 7'		Torr Point Rock	55° 11' 8"	6° 3' 5"	
Kenmare	51° 53'	9° 33'		Knocklaid, 1,690 feet	55° 9' 7"	6° 15' 2"	
Scara Rock	51° 44'	10° 15'		Maiden Rocks **	54° 55' 8"	5° 44' 25"	
Lamb-Head Point	51° 45'	10° 7'		Black Head	54° 46' 1"	5° 41' 25"	
Bolus Head	51° 46'	10° 19'		Carrickfergus	54° 45' 5"	5° 48' 5"	
Skelligs **	51° 46'	10° 32'		Belfast Spire	54° 36' 4"	5° 56' 25"	
Brea Head	51° 53'	10° 25'		Divis, 1,800 feet	54° 36' 7"	6° 1' 0"	
Valentia, Cromwell's Fort, * S.M.	51° 55' 8"	10° 19' 9" 7"		Copeland Island *	54° 41' 7"	5° 31' 2"	
Killarney	52° 4'	9° 30'		Donaghadee *	54° 38' 6"	5° 31' 7"	
Ventry Head	52° 6'	10° 20'		Kircubbin	54° 29'	5° 34'	
Foze Rock	52° 1'	10° 40'		Portaferry	54° 23'	5° 34'	
Tiraght Rock	52° 3'	10° 39'		South Rocks *	54° 23' 9"	5° 25' 0"	
Great Blasket, North Point	52° 6'	10° 31'		Ardglass Pier *	54° 15' 4"	5° 36' 0"	
Ennis Tuskur Rock	52° 7'	10° 35'		Downpatrick Cathedral	54° 19' 6"	5° 43' 0"	
Dunorling Head	52° 12'	10° 25'		St. John's Point *	54° 13'	5° 40'	
Brandon Hill, 3,125 feet	52° 14'	10° 15'		Slieve Donard, 2,796 feet	54° 10' 8"	5° 55' 25"	
Brandon Head, Point	52° 18'	10° 10'		Carlingford *	54° 2' 0"	6° 7' 75"	
Tralee	52° 16'	9° 48'		Blockhouse Island, ** Bell	54° 1' 2"	6° 4' 75"	
Shannon, Kerry Head	52° 23'	9° 55'		Newry Church	54° 10' 6"	6° 19' 75"	
Tarbert *	52° 35' 5"	9° 21' 9"		Dundalk Spire	54° 0' 5"	6° 24' 0"	
Limerick Bridge	52° 39' 6"	8° 39'		Clogher Head	53° 47' 6"	6° 13'	
Kileradan Light *	52° 34' 8"	9° 42' 66"		Drogheda ***	53° 42' 8"	6° 15'	
Loup Head *	52° 34'	9° 56'		Balbriggan *	53° 36' 8"	6° 10' 75"	
Ballard Point	52° 43'	9° 39'		Rockabil Island	53° 35' 8"	6° 0' 25"	
Hag's Head	52° 57'	9° 28'		Lambay Island	53° 29' 6"	6° 1' 0"	
South Arran Island *	53° 7' 6"	9° 42' 4"		Howth Bailey * Light	53° 21' 7"	6° 3' 0"	
Black Head	53° 9'	9° 17'		Rockal, a Rock N.W. of Ireland, } in open sea	57° 36'	13° 41'	

V. NORTH COAST OF EUROPE.

	Lat. N.	Long. E.
Dunkirk*.....	51° 3' 1"	2° 22' 0"
Nieuport, * N.W. of Town.....	51° 8' 6"	2° 44'
Ostend, ** West Light.....	51° 14' 1"	2° 55' 0"
Blankenburg *.....	51° 19' 0"	3° 8' 0"
Heyt *.....	51° 20' 4"	3° 14' 2"
Flushing *.....	51° 26' 4"	3° 34' 75"
West Kappel *.....	51° 31' 8"	3° 27' 0"
Middelburg.....	51° 30' 0"	3° 37' 0"
Schouwen, * West End.....	51° 42' 6"	3° 41' 75"
Bergen-op-Zoom Church.....	51° 29' 7"	4° 17' 5"
Goedereede Church *.....	51° 49' 2"	3° 58' 5"
Antwerp Cathedral.....	51° 13' 2"	4° 24' 25"
Helvoetsluis *.....	51° 49' 2"	4° 8' 0"
Brielle.....	51° 54' 2"	4° 10' 0"
Rotterdam Cathedral.....	51° 55' 3"	4° 29' 5"
The Hague, St. James's Church.....	52° 4' 3"	4° 18' 7"
Scheveningen *.....	52° 6' 3"	4° 16' 5"
Katwyk, Coast Light *.....	52° 12' 0"	4° 23' 75"
Nordwyk * Light.....	52° 14' 6"	4° 26' 0"
Alkmaar.....	52° 37' 9"	4° 45' 25"
Zandvort *.....	52° 22' 3"	4° 32' 0"
Egmont *.....	52° 37' 2"	4° 38'
Kyk Down *.....	52° 57' 1"	4° 43' 5"
Helder.....	52° 57' 7"	4° 45' 0"
Texel, West Point.....	53° 3'	4° 42'
Medemblik Church.....	52° 46' 4"	5° 6' 5"
Marken Island *.....	52° 27' 6"	5° 8' 7"
Amsterdam, West Steeple.....	52° 22' 5"	4° 53' 25"
Haarlem, Great Church Tower.....	52° 22' 9"	4° 38' 5"
Lyden Observatory.....	52° 9' 5"	4° 29' 5"
Vlieland *.....	53° 17' 8"	5° 8' 7"
Ter Schelling *.....	53° 21' 6"	5° 13' 25"
Ameland Beacon.....	53° 27' 0"	5° 42' 0"
Schiermonckoog **.....	53° 29' 3"	6° 10' 0"
Rottum Beacon.....	53° 32' 0"	6° 32' 0"
Borcum *.....	53° 35'	6° 40'
Emden, Hotel de Ville.....	53° 22' 1"	7° 12' 75"
Wangeroog *.....	53° 47' 6"	7° 54'
Bremer or Weser, * Bell, Guns.....	53° 49' 8"	8° 8'
Bremen Observatory.....	53° 4' 6"	8° 49' 0"
Hellgoland *.....	54° 10' 8"	7° 53' 0"
Elbe, Outer Light, Bell, Gun.....	54° 0' 0"	8° 18' 0"
„ Inner Light, Bell.....	53° 58' 8"	8° 26' 0"
Eider, * Bell, Gun.....	54° 10' 7"	8° 35' 0"
Newark Isle **.....	53° 55' 2"	8° 30' 0"
Cuxhaven *.....	53° 52' 5"	8° 43' 0"
Gluckstadt Pier *.....	53° 47' 1"	9° 24' 5"
Altona Observatory, S. M.....	53° 32' 7"	9° 56' 39"
Hamburgh.....	53° 32' 8"	9° 58' 5"
Horn Point.....	55° 35'	7° 40'
Hantsholmen Point *.....	57° 6' 8"	8° 36' 2"
Harshall's Nist.....	57° 35'	9° 56'
The Skaw Point *.....	57° 43' 8"	10° 36' 5"
Hirtsholmen *.....	57° 29' 2"	10° 37' 5"
Fladstrand Church.....	57° 27' 0"	10° 33' 75"
Niedingen, * Bell.....	57° 19'	11° 53'
Trindelen, * Bell.....	57° 25' 6"	11° 16'
Lessoe Isle, Byrum Church.....	57° 15' 4"	11° 0' 25"
Anholt, East Point *.....	56° 44' 3"	11° 39' 25"
Knobens * Light, Bell.....	56° 45' 7"	11° 50' 75"
Hesselø *.....	56° 11' 7"	11° 43'
Aalborg.....	57° 2' 7"	9° 55'
Forenas *.....	56° 26' 7"	10° 57' 5"
Aarhus, Cathedral.....	56° 9' 5"	10° 13' 0"
Thaue Island *.....	55° 56' 9"	10° 27' 0"
Baagøe, South Point *.....	55° 17' 7"	9° 48' 0"
Apenrade.....	55° 2' 6"	9° 25' 25"
Assens, Church.....	55° 16' 1"	9° 53' 75"
Flensburg.....	54° 46' 9"	9° 26' 2"
Siøllands, N.W. Point.....	56° 5'	11° 15'
Kyholm *.....	55° 56' 0"	10° 40' 7"
Refsum *.....	55° 44' 7"	10° 52' 5"
Sprogø *.....	55° 20'	10° 58'

NORTH COAST OF EUROPE.

	Lat. N.	Long. E.
Nyeborg *.....	55° 18' 7"	10° 47' 7"
Fakkeberg *.....	54° 44' 4"	10° 42' 0"
Spodsbjerg *.....	55° 58' 6"	11° 52' 0"
Nakkehoved **.....	56° 7' 2"	12° 21' 0"
Elsinor, Kronberg *.....	56° 2' 2"	12° 37' 5"
Copenhagen Observatory.....	55° 40' 9"	12° 34' 75"
Malmö *.....	55° 36' 1"	13° 0' 0"
Landakrona *.....	55° 52' 4"	12° 50' 0"
Helsingborg *.....	56° 2' 7"	12° 42' 25"
Kullen *.....	56° 18' 0"	12° 27' 5"
Engelholm.....	56° 14' 6"	12° 52' 0"
Hallands Wadaro, West extremity.....	56° 27' 1"	12° 32'
Halmstadt, Fort.....	56° 40' 4"	12° 51' 75"
Falkenberg Church.....	56° 54' 0"	12° 30' 0"
Morruptange * Light.....	56° 55' 2"	12° 21' 75"
Warberg Castle.....	57° 6' 4"	12° 14' 5"
Niddingen, ** Bell.....	57° 18' 2"	11° 54' 3"
Vanguard Shoal.....	57° 32'	11° 39'
Wingo *.....	57° 38' 0"	11° 36' 2"
Buskär * Light.....	57° 38' 6"	11° 40' 75"
Gottenburg.....	57° 42' 3"	11° 56' 5"
Marstrand * Light.....	57° 53' 2"	11° 35' 0"
Paternoster Isl., S. & W. extremity.....	57° 53' 5"	11° 27'
Salo * Light.....	58° 20' 2"	11° 16'
Rock.....	58° 42'	10° 53'
Torbjörnskar Beacon.....	58° 58' 7"	10° 47'
Foerder * Light.....	59° 4'	10° 32'
Fulehuk * Light, Bell.....	59° 11' 4"	10° 37'
Frederiksteen.....	59° 7' 5"	11° 24'
Frederikstadt.....	59° 13'	10° 57'
Christiania, New Observatory.....	59° 54' 7"	10° 43' 5"
Svecoe Langøe Sound * Light.....	58° 58'	9° 46'
Tvesten.....	58° 56'	9° 57'
Reierskar Rock, Gun.....	58° 10' 1"	8° 27'
Jomfrueland *.....	58° 52'	9° 36'
Arendal Torungen *.....	58° 23' 2"	8° 52' 5"
Oxo Light *.....	58° 3' 7"	8° 6'
Christiansand.....	58° 8' 1"	7° 59' 0"
Flekkeø Island.....	58° 2'	7° 57'
Ryvingen Island.....	57° 57' 0"	7° 31'
Naze Light *.....	57° 57' 8"	7° 2'
Listersteen Light *.....	58° 6'	6° 32'
Tungnes Light *.....	59° 3'	5° 37'
Hvidingsøe Light *.....	59° 5'	5° 25'
Skuddesnes Light *.....	59° 8' 7"	5° 19'
Høievarde Light *.....	59° 20'	5° 20'
Udøe **.....	59° 18' 3"	4° 53' 5"
Sor Hougøen Rock *.....	59° 25' 2"	5° 15' 25"
Bommeløe, South Point.....	59° 35'	5° 11'
Fugløe.....	60° 1'	4° 59'
Kors Fiord.....	60° 8'	4° 57'
Bergen.....	60° 24'	5° 18'
Stadland, North-West Point.....	62° 11'	5° 8'
Ronde Light *.....	62° 24' 6"	5° 36'
Quistholm Light *.....	63° 2' 2"	7° 14'
Christiansund *.....	63° 7'	7° 39'
Trondheim Cathedral.....	63° 25' 8"	10° 23' 75"
Titterhead.....	63° 40'	8° 19'
Vigten Isles, West extremity.....	64° 46'	10° 24'
Proestoe Light *.....	64° 47' 4"	11° 8'
Lekøe.....	65° 5'	11° 37'
Tranen Isles, Great Isle, N. Peak.....	66° 31'	12° 4'
Kunna.....	66° 57'	13° 32'
Lofoden Isles, South Point.....	67° 49' 5"	12° 50'
West Vangøe Isle, North Point.....	68° 20' 5"	13° 59'
Langøe Isle, West Point.....	68° 37'	14° 14'
Andøe, North Point.....	69° 20'	16° 8'
Tromsøe Observatory.....	69° 39' 2"	18° 57' 0"
Hammerfest Church.....	70° 40' 0"	23° 42' 0"
Vandø, North Point.....	70° 17' 6"	19° 36'
Arno, North-East Point.....	70° 13'	20° 49'
Sorøen, West Point.....	70° 39'	21° 55'
North Cape.....	71° 10' 3"	25° 46' 0"

VI. BALTIC.	Lat. N.	Long. E.	BALTIC.	Lat. N.	Long. E.
Copenhagen Observatory	55 40.9	12 34.75	Bierko Island, South Point.....	60 15.7	28 43.2
Steffens Klint*	55 18	12 27	Styrsoedd Head, Beacon	60 12.0	29 0.0
Moen Island, East Point*	54 57	12 33	Orregrund, Beacon	60 16.6	26 27.25
Giedserodde*	54 33.8	11 58.0	Great Pellinge or Glesholm*	60 11.2	25 50
Trindelen	54 30.5	12 4	Soderakar Tower	60 6.2	25 24
Kial Observatory	54 19.5	10 9.0	Kallbaden	59 59	25 37
Marienleuchte*	54 29.7	11 14.25	Helsingfors Observatory	60 9.7	24 57.5
Staberbuk, S.E. Point of Fehmern	54 24	11 19	Sveaborg	60 8.4	24 59.75
Lubeck, Church, St. Mary's	53 52.1	10 41.5	Ronakar Light*	59 56	24 24
Wismar, Church, St. Mary's	53 53.5	11 27.75	Jussari, Pilot's House	59 49.7	23 34
Warnemunde*	54 10.7	12 5.75	Segelakar, Beacon	59 46	23 22
Rostock	54 5.5	12 9.0	Hango Light*	59 46.0	22 58
Dars Head**	54 28.6	12 30.5	Abo Observatory	60 27.0	22 17.5
Stralsund	54 18.3	13 5.5	Uto*	59 46.5	21 22
Arkona*	54 40.9	13 26.2	Lagakar*	59 50.5	19 55.25
Bergen Church	54 25.5	13 28.0	Enskar*	60 43	21 2
Rugen, East Point	54 21	13 48	Sabbakar, Beacon	61 27.7	21 22
Griefswalder Light**	54 15.1	13 55.7	Bjorneborg	61 29.0	21 48
Swinemunde*	53 56.0	14 17.0	Tornburg Beacon	62 13.0	21 20
Stettin	53 25.1	14 34.0	Christinestad	62 16.2	21 23
Colberg, Fort	54 10.8	15 35	Storkalle Shoal, South Point	62 45	20 50
Jersbøft Light*	54 32.5	16 33.0	Falkar Beacon	63 4	20 49
Hela Light*	54 36.1	18 49.25	Wass Church	63 4.3	21 43
Rezhof*	54 49.9	18 20.5	Korsoran Beacon	63 11.8	21 10
Neufahrwasser*	54 24.2	18 40.25	Nordakaren*	63 14	20 38
Danzig Observatory	54 21.3	18 41.2	Tankar Beacon	63 57.3	22 52
Pillau*	54 38.4	19 54.0	Gamla Karleby	63 50	23 9
Königsberg Observatory	54 42.8	20 30.25	Kalla Rock, Outer Rock	64 20.0	23 29
Brusterort*	54 57.6	19 58.25	Carlo Island Beacon, West Point	65 2.0	24 33
Memel*	55 43.7	21 6.2	Ulsaborg Church	65 1.0	25 30
Libau	56 31.6	20 57.0	Ulukgrunni Beacon	65 24	24 51
Windau Church	57 23.9	21 34.0	Malorn*	65 31	23 38
Lyserort Light*	57 34	21 44	Tornea	65 50.8	24 14
Domesness**	57 45.6	22 37	Rodkallen Rocks	65 20	22 23
Runo Island*	57 48	23 16	Pitea	65 19.2	21 30.0
Riga** Cathedral	56 57.0	24 6.5	Great Fjäderäg* Island	63 48	21 1
Pernau, German Church	58 23.1	24 30.25	Gadd,* on South Point of Island	63 36.0	20 46
Arensburg	58 15.1	22 30	Umes	63 49.5	20 18
Svalfart, (Esel Isl., S. Point)*	57 54.6	22 5	Hernoesand	62 37.9	17 57
Filsand, W. Point of Great Island	58 23	21 51	Stor Jungfrun,* East Point	61 10	17 20
Dagerort Light*	58 55.0	22 12.0	Soderhamm	61 17.7	17 5
Winkova, White Beacon	59 12	22 18	Gefle	60 40.3	17 9
Odensholm Light*	59 18.3	23 22.0	Eggrund*	60 43	17 32
Packerort Light*	59 23.5	24 2	Orskar*	60 31.5	18.22
Surop Light*	59 27.9	24 23.25	Svartklubb*	60 9.8	18 50
Nargen, North Point*	59 36.4	24 31.0	Soderarm Light*	59 45.2	19 28
Revel,* St. Olaus Church	59 26.6	24 45.25	Svenska Hogarne	59 27	19 31
Kokakar Light*	59 42.0	25 2	Stockholm Observatory	59 20.6	18 3.75
Ekholm Light*	59 41.2	25 49	Korab Light*	59 17.3	18 58
Stoneskar Beacon	59 49.5	26 21	Gronskar Light*	59 17	19 2
Rothskar Island*	59 58.2	26 42.0	Landsort*	58 44.5	17 52.75
Little Tiouters, West Point	59 50.0	26 53.0	Westarwyk	57 45.6	16 38
Great Tiouters, East Point	59 51.0	27 14.5	Kalmar, Church	56 39.5	16 22
Hogland**	60 6.3	26 58.5	Gottaka Sando, West Point	58 24	19 11
Lavenskar Island, North Point	60 2.3	27 51.0	Faro Island, Holm Head*	57 58	19 23
Peni Island, East Point	60 1.1	28 5.0	Gothland, South Point, Hoborg*	56 55.2	18 9
Seskar Island, North-West Point*	60 2.1	28 23.5	Ostergarnsholm Light*	57 26.5	18 59
Cape Kolganpia	59 50.9	28 34.75	Wisby	57 38.6	18 16
Dolgoi Noss	59 54.8	29 0.5	South Cariso	57 19	17 59
Tolboukhin Light*	60 2.6	29 34.0	Oland, North Head*	57 22	17 6
London Shoal*	60 0.0	29 32.5	„ South Head*	56 11.8	16 25
Kronstadt, Cathedral	59 59.7	29 46.5	Christianopol	56 15.5	16 3.0
Elagin Channel Light*	59 58.3	30 10.5	Utklipporna Rocks*	55 56.5	15 42
Ship Channel Light*	59 55.3	30 10.7	Carlscrena	56 9.7	15 35.5
St. Petersburg Observatory	59 56.5	30 19.0	Carlsaham*	56 10.3	14 52.0
Poulkova Observatory	59 46.3	30 19.75	Hano Island	56 1.0	14 51
Grekoa Beacon	60 11.6	28 42.5	Ahus	55 55.5	14 18
Wiborg	60 42.7	28 46	Cimbriaham	55 33.5	14 21.25
Aspo Beacon*	60 17.7	27 13	Ystad, Church	55 25.8	13 49.5
Nerva Tower	60 14.8	27 58.5	Earthholms, North Point*	55 19	15 12
Sommers Island*	60 12.4	27 39.5	Bornholm, North Point*	55 17.7	14 46
Lippu Island Beacon	60 14.3	27 3.0	„ South Point	54 59	15 5
Fredericksham	60 34	27 16	„ Kønne*	55 6	14 42
Lovisa	60 27.6	26 16	Falsterbo*	55 23.1	12 49.25

VIL. FRANCE.		Lat. N.	Long. E.	FRANCE.		Lat. N.	Long. W.
Gravelines *	51	0.3	2 6.5	L'Orient, Tower	47	44.7	3 21.21
Calais, * Bell	50	57.6	1 51.04	Port Louis, Church	47	42.5	3 21.2
Cape Grisnez *	50	52.2	1 35.04	Ile de Groix *	47	38.9	3 30.7
Boulogne, Column	50	44.5	1 37.04	Port Haliguen, * East Jetty	47	29.2	3 6.2
Boulogne, ** Jetty	50	43.9	1 35.0	Teignouse *	47	27.5	3 2.7
Port Alpreck *	50	41.9	1 3.75	Port Navale *	47	32.9	2 55.2
Etapes	50	32.9	1 38.5	Penlan Point *	47	31.0	2 30.2
Port Lornel *	50	33.6	1 34.5	Belle Ile *	47	18.7	3 13.7
Port de Touquet **	50	31.7	1 35.5	„ Port de Palais *	47	20.9	3 9.2
Port de Berck *	50	24.0	1 33.5	Hoedic Ile *	47	20.5	2 52.2
Abbeville, Notre Dame	50	7.1	1 49.75	Le Four Roche *	47	17.9	2 38.2
St. Valery-sur-Somme	50	11.4	1 37.75	Vannes St. Pierre	47	39.5	2 45.4
Cayeux *	50	11.7	1 30.75	Guerande, Church	47	19.7	2 25.7
Tréport *	50	3.9	1 22.0	Croisic, Church *	47	17.7	2 31.0
Dieppe, West Jetty *	49	56.0	1 5.04	Aiguillon, Tower	47	14.6	2 16.0
Cape Ailly *	49	55.1	0 57.5	Port St. Nazaire, Mole *	47	16.3	2 12.0
St. Valery-en-Caux	49	52.4	0 42.5	Paimboeuf, Church	47	17.3	2 2.2
Fecamp, Mont de la Vierge	49	46.1	0 22.0	Nantes, Cathedral	47	13.1	1 33.2
Cape de la Heve **	49	30.7	0 4.0	Le Pilier Ile *	47	2.6	2 21.7
Havre, North Jetty, * Bell	49	29.3	0 6.54	Noirmoustier, South Point	46	53.8	2 9.0
Port du Hoc *	49	28.7	0 11.3	Ile Dieu, St. Sauveur Church	46	42.4	2 20.0
Paris Observatory	48	50.2	2 20.9"	St. Gilles-sur-Vie Church	46	41.7	1 56.2
Quillebeuf *	49	28.4	0 31.5	Sables d'Olonne Church	46	29.8	1 47.2
Honfleur **	49	25.5	0 13.5	Le Chause *	46	29.7	1 47.7
Mouth of the Touques **	49	21.7	0 4.75	Roche Bonne, West	46	13	2 29
				Port de Grouin de Cou *	46	20.8	1 28.2
				Port de l'Aiguillon *	46	16.1	1 12.7
Mouth of the Orne **	49	16.6	0 15.5	Ile Re, North Point *	46	14.7	1 33.7
Port Corseilles *	49	20.3	0 27.5	Port St. Martin *	46	12.4	1 22.0
Caen, Abbey	49	11.2	0 21.2	South Port de Chauveau *	46	8.0	1 16.5
Port de Ver *	49	20.5	0 31.2	Rochelle, ** Tower	46	9.4	1 9.5
Carentan	49	18.4	1 14.7	Oleron Ile, North Point *	46	2.8	1 24.7
St. Marcouf Island *	49	29.9	1 9.0	Aix Ile *	46	0.6	1 10.7
La Hougue **	49	34.3	1 16.5	Roche fort, Hôpital	45	56.6	0 58.0
Cape Barfleur *	49	41.8	1 16.0	Port de la Coubre *	45	41.5	1 15.5
Port Barfleur *	49	40.1	1 15.7	River Gironde, Cordouan Light *	45	35.2	1 10.46
Pelee Island, Port Royal *	49	40.3	1 35.0	Terre Nègre, * Tower	45	38.8	1 6.46
Cherbourg, Church	49	38.6	1 37.45	Port Royan *	45	37.1	1 2.0
Cape La Hague *	49	43.4	1 57.8	Pointe de Grave *	45	34.1	1 3.7
Maitresse Isle	48	58.3	2 4.0	Bordeaux, St. André	44	50.3	1 34.7
St. Germain	49	14.2	1 36.0	Bassin d'Arcachon, Cape Ferret *	43	38.7	1 15.2
Cape Carteret *	49	22.4	1 48.5	Port St. Martin de Biarritz	43	29.6	1 33.2
Contances Cathedral	49	2.9	2 26.7	Bayonne, Cathedral	43	29.5	1 28.7
Granville, Cape Lihou *	48	50.1	1 37.0	St. Jean de Luz	43	23.3	1 40.0
Mont St. Michel	48	38.2	1 30.7				
Concale, Church	48	40.7	1 51.0				
Herpin Rock	48	43	1 50				
St. Malo *	48	39.0	2 1.7	Cape Bearn *	42	31.0	3 7.25
La Conchee Rock	48	41	2 3	Port Vendres *	42	31.3	3 6.8
Cape Frehel *	48	41.1	2 19.2	La Nouvelle *	43	0.8	3 3.8
Grand Lejon Rock	48	45.0	2 40.0	Fort Brescou, * S.E. Bastion	43	15.5	3 29.8
St. Brieuçk, Cathedral	48	30.9	2 46.0	Agde Harbour, * East Jetty	43	16.7	3 26.5
Horaine Rock, Beacon	48	53.6	2 57.2	Cette, * Fort Louis	43	23.8	3 42.0
Heaux de Brehat *	48	54.5	3 5.2	Aigues Mortes *	43	32.0	4 7.8
Treguier, Cathedral	48	47.3	3 14.0	Camargue, * West Mouth of Rhone	43	20.7	4 40.8
Les Sept Isles *	48	52.8	3 29.45	Port de Bouc **	43	23.6	4 59.0
Triagoz Shoal, West extremity	48	53	3 44	Marseille, ** Fort St. Jean	43	17.7	5 21.54
Morlaix *	48	38.2	3 53	Planier Ile *	43	11.9	5 13.8
St. Pol de Leon, Cathedral	48	41.0	3 59.2	Mont St. Michael, Semaph., 1341 ft	43	13	5 22
Ile de Batz, * West side	48	44.8	4 1.7	Ile Riou	43	10	5 23
Ile Vierge *	48	38.4	4 34.2	Port Cassis *	43	12.8	5 31.8
Aberwrach *	48	36.9	4 34.7	Cassidaigne	43	8.7	5 32.8
Ploungreueau *	48	36.3	4 29.2	Cape Sicie, Semaphore	43	3.2	5 51
Port St. Matthew	48	19.8	4 46.4	Toulon, Semaphore	43	4.4	5 56.3
Ushant *	48	28.5	5 3.45	Grand Riveau *	43	1	6 9
Kermorvan *	48	21.7	4 47.45	Porquerolles Isle, South Point *	42	59.0	6 12.3
Brest Observatory	48	23.6	4 29.45	Titan Isle, N.E. Port *	43	2.8	6 30.5
Ile de Sein *	48	2.7	4 52.2	Cape Camorat *	43	12.0	6 40.5
Outer Rock	48	3	5 15.2	Frejus	43	25	6 46
Bec du Raz *	48	2.4	4 44.0	Cape Roux	43	28	6 55
Audierne Church	48	1.4	4 32.7	Cannes, South Tower	43	32.9	7 0.8
Penmarc'h Rocks *	47	47.9	4 22.45	Cape Garoupe *	43	33.8	7 8
Ile Glenan, Penfret Ile *	47	43.3	3 57.2	Antibes *	43	35.1	7 7.5
Quimper River, Benodet, Church	47	52.6	4 7.0	St. Laurent du Var	43	40.7	7 10.8
				Nice, St. Francis Church	43	42.0	7 16.8

VIII. SPAIN.	Lat. N.	Long. W.	SPAIN.	Lat. N.	Long. W.
Fontarabia,* Church	43 21.7	1 47.25	Fort Arrabida	38 27.5	8 59
Cape Figuer	43 23.7	1 47.25	Outao Light*	38 27	8 56
Port Passages,* Church	43 19.7	1 55.25	St. Ubes, or Setuval	38 31	8 53
St. Sebastian*	43 19.2	2 0.5	Cape Sines, Fort	37 57.5	8 52.5
Cape Machichaco*	43 23	2 49	Odemira, Tower	37 39.8	8 49
Cape Villano	43 27	2 58	Cape St. Vincent*	37 2.9	9 0
Bilbao, St. Nicholas	43 15.8	2 54	Lagos, Cathedral	37 7.7	8 40.75
Portugalete	43 20.2	3 3	Cape Carvoeira, Tower	37 6.5	8 21
Monte Serrantes	43 21	3 5	Cape Sta. Maria*	36 56	7 46
Santona	43 27	3 27	Monte Figo	37 10	7 42
Cape Ajo	43 31.4	3 36	River Guadiano	37 10	7 18
Santander	43 27.9	3 48.75	San Lucar, Guadalquivir	36 44	6 24
Cape Mayor*	43 30	3 47	Rota, Pier	36 36.6	6 16.25
Cape Hoyambre	43 25	4 21	Cadiz Observatory	36 32.0	6 17.25
Cape Prieto	43 28	4 51	St. Sebastian*	36 31.6	6 18.5
Point del Caballo	43 30	5 6	Cape Trafalgar	36 10	6 1
Lastres	43 33	5 16	Tarifa	36 0	5 36
Cape Penas*	43 42.0	5 47.75	Algeciras	36 8.0	5 26.0
Cape Busto	43 36	6 25	Gibraltar	36 7.3	5 21.25
Cape Blanco	43 35	6 47	Europa Point*	36 6.7	5 22.0
Ile Pancha, West extremity	43 34.7	6 59.25	Cape Sardinia, Tower	36 18	5 14
Rivadeo	43 34	7 5	Estapona	36 25	5 9
Monte Mondigo	43 32	7 5	Malaga, Mole*	36 43.5	4 26
Point de los Calos	43 36	7 13	Motril	36 45	3 34
Cape Burela	43 42	7 21	Cape Sacratif	36 41	3 28
Monte Faro	43 44	7 35	Almeria	36 50	2 32
Port Barquero	43 45	7 43	Cape de Gata, Castle	36 43	2 12
Port Vivero	43 40.5	7 36	Mojasar	36 58	1 55
Cape Vares	43 48	7 41	Cape Tinoso	37 31	1 9
Point de la Estaca*	43 48	7 42	Cartagena, Mole*	37 36	0 56
Cape Ortegai, Tower	43 45.2	7 56	Cape de Palas, Tower	37 37.5	0 40
Cape Prior*	43 34.1	8 19	Cape Servera	38 0	0 38
Monte Ventoso	43 29	8 20	Cape Sta. Pola, South Point	38 11	0 29
Ferrol, Mole	43 29.5	8 12.75	Alicante,* Castle	38 20.7	0 26
Corunna, Castle, St. Antonio	43 22.5	8 22.7	Benidorme	38 29	0 6
Cisargas Isles	43 21.5	8 50	Cape Cullera, Tower	39 12	0 13
Cape Villano, North-East Point	43 10	9 12	Valencia,* Cathedral	39 28.7	0 24
Cape Torihana	43 2	9 17	Cape Canet, Tower	39 43	0 9
Cape Finisterre*	42 53	9 15		Lat. N.	Long. E.
Monte Louro	42 44	9 44	Cape Oropesa, Tower	40 5.2	0 10
Cape Corrobido*	42 35	9 4	Peniscola, Tower	40 23	0 25
Ons Isle	42 20	8 55	Port Alfaques, San Carlos	40 37.7	0 35
Cies Isle, South-West extremity	42 11	8 53	Ebro, North Passage	40 43.0	0 54
Cape Silleiro, West Point	42 6	8 52	„ South Passage	40 41	0 53
Vigo Light*	42 15	8 40	Tortosa, Cathedral	40 48.8	0 33
Monte Nossa Senora del Alba	42 14	8 45	Salau Light, Mole*	41 4	1 9
Monte Tecla, River Minho	41 53	8 50	Tarragona*	41 7	1 16
Caminha	41 52.7	8 45.0	Barcelona, Mole*	41 22.6	2 11
Vianna, Fort St. Jago*	41 42.6	8 43.25	Cape St. Sebastian	41 53	3 13
Villa de Conde	41 21.3	8 35.75	Cape Norfeo, East Point	42 14	3 17
Monte Ornellas	40 50	8 21	Cadaques, Church	42 17	3 17
Oporto, Fort St. John	41 8.8	8 37.25	Cape de Creux, Ruin	42 19.2	3 20
„ Light*	41 9.1	8 37.5	Cape Nao, East Point	38 44	0 14
Aveiro	40 38.4	8 37.7	Cape St. Antonio*	38 48.5	0 10
New Bar	40 38	8 43	Mongo Monte	38 43	0 8
Old Bar	40 33	8 46			
Monte Caramulo	40 32	8 12	Balearic Isles.		
Coimbra University	40 12.5	8 25	Iviza, Castle	38 54.3	1 29.25
Cape Mondago*	40 12	8 54	Port De Serra, or North Point	39 8	1 34.5
Figueira*	40 10	8 51	Port St. Antonio, Conjera Grande,	39 0.4	1 16.5
Port de Paredes	39 54	8 59	North Point		
Faillhoens Rocks, Great Rock	39 29.3	9 32.7	Formentera, S. Pt., or Pt. Aguila	38 38	1 25.5
Berlengas Isles*	39 25	9 50.75	Majorca—Cabrera, South Point	39 5	2 55.5
Cape Carvoeira*	39 21.8	9 25	Cape Salinas	39 14	3 6.5
Monte Junto	39 10	9 3	Palma, Mole	39 34.1	2 41
Cape Roca*	38 46	9 30	Dragonera Isle*	39 36	2 20.5
Monte Cintra	38 47.2	9 25	North Point, or Cape Formenton	39 57	3 17.5
Fort Sanxete	38 42	9 29	East Point, or Cape Pera	39 42	3 29.5
Da Guia*	38 41.8	9 27.5	Minorca—Mahon, Mole*	39 52.5	4 23.5
Bugio*	38 39.6	9 18.75	Cape Mola, or East Point	39 52.7	4 27.0
St. Juliao,* Fort	38 40.3	9 20.5	Port Fornelles	40 3.5	4 11.2
Lisbon, Marine Observatory	38 42.4	9 8.25	Cape Bajoli, or West Point	40 1	3 50
Cape Espichel*	38 24.9	9 13	Cape Dortuch	39 55	3 53.5

IX. ITALY.	Lat. N.	Long. E.	ITALY.	Lat. N.	Long. E.
Port Maurizio, Mole Head.....	43 53.2	9 59.0	Cape Scalambra, Tower.....	38 46.2	14 30.5
Cape della Mele.....	43 58	8 11	Passaro Isle,* Cape Passaro....	36 41.5	15 9.0
Finale, Church.....	44 9.9	8 19.0	Cape Murro di Porco, Point....	37 0.0	15 19.0
Noli, Convent St. Francisco.....	44 11.9	8 22.75	Syracuse*.....	37 3.0	15 16.5
Vado, Fort St. Lorenzo.....	44 15.5	8 24.5	Cape Panagia, Point.....	37 6.5	15 17.0
Savona, Citadel.....	44 18.4	8 27.75	Egosta*.....	37 12.8	15 13.25
Polla Rock.....	44 25.0	8 46.0	Catania, Mole*.....	37 28.3	15 5.2
Genoa***.....	44 24.9	8 53.0	Mount Etna, 10,874 feet.....	37 43.5	15 0.0
Point Chiapa.....	44 20.0	9 10.5	Taormina, Telegraph.....	37 48.2	15 17.75
Cape Porto Fino, Fort.....	44 18.2	9 14.25	Scaletta, Fort.....	38 1.7	15 27.75
Sestri di Levante, Fort.....	44 16.4	9 25.5	Malta, Valetta, Palace.....	35 53.8	14 31.25
Port Venere, North Entrance....	44 3.2	9 52.75	St. Elmo,*.....	35 54.1	14 31.5
Tino Isle*.....	44 2.4	9 52.0	Spencer's Monument.....	35 53.0	14 30.75
Spezzia, Castle.....	44 6.3	9 52.25	S.E. extremity, Point della Mare.	35 49.7	14 34.75
Pisa, Leaning Tower.....	43 43.5	10 24.0	Cape Demitri.....	36 4	14 8
Florence Cathedral.....	43 46.6	11 15.5	Sardinia, Cagliari, St. Pancras..	39 13.2	9 7.75
Leghorn*.....	43 32.7	10 17.75	Cape Spartivento, South Point....	38 52.5	8 52.5
Gorgona Isle.....	43 25.8	9 53.5	Cavoli Isle, Cape Carbonara.....	39 6.1	9 31.5
Capraia Isle, Castle, East side...	43 2.6	9 50.75	Cape Teulada.....	38 51.9	8 39.25
Piombino, Palace.....	42 55.7	10 31.75	St. Pietro Isle.....	39 9.7	8 17.75
Elba, North extremity.....	42 52.5	10 25	Asinara Isle.....	41 5.8	8 18.25
„ West extremity.....	42 46.2	10 6.5	Port Torres*.....	40 50.2	8 24.75
„ Porto Ferrajo*.....	42 49.1	10 20.5	Cape della Testa*.....	41 14.2	9 9.25
Palmaiole Isle*.....	42 52.0	10 28.5	Razzoli Isle*.....	41 18.3	9 20.75
Pianosa Isle, West Point.....	42 32.7	10 5.25	Caprera Isle.....	41 12.9	9 29.0
Giglio Isle, South Point.....	42 19.2	10 56.0	Cape Comino.....	40 31.4	9 50.5
Civita Vecchia*.....	42 5.7	11 44.0	Calvi, Point Rivellata*.....	42 35.2	8 43.5
Cape Linaro, Reef.....	42 2	11 49	Giraglia Isle*.....	43 1.8	9 24.25
Tiber, Fiumicino*.....	41 45.8	12 11.75	Corsica, Sanguinaires* Isles.....	41 52.8	8 35.75
Rome, St. Peter's, Dome.....	41 54.1	12 27.25	Ajaccio, Cathedral.....	41 55.0	8 44.75
Port Anzo*.....	41 26.9	12 42.25	Cape Muro, S.W. Point.....	41 44.5	8 39.5
Monte Circeo, Church.....	41 12.7	13 5.25	Bonifacio.....	41 23.8	9 9.25
Terracina, Palace.....	41 17.1	13 15.5	S. extremity, Mount Pertusato*..	41 22.2	9 11.25
Gaeta,* Orlando Tower.....	41 12.4	13 34.75	Porto Vecchio*.....	41 35.2	9 20.75
Ponza Isle*.....	40 53.0	12 57.5	East extremity, Fiorentino Tower	42 17.0	9 33.75
Ischia Isle, Castle, East Point...	40 43.9	13 57.7	Bastia, Mole*.....	42 41.8	9 27.0
Cape Miseno*.....	40 46.5	14 5.25	Finocchiarola Tower.....	42 59.3	9 28.0
Pozzuoli, Church.....	40 49.2	14 7.25	Beglio.....	38 5.9	15 40.0
Naples Observ., Capo di Monte..	40 51.8	14 15.5	Cape Spartivento.....	37 56	16 4
„ Mole Light*.....	40 59.3	14 15.75	Cape Stilo.....	38 29.3	16 37
Mount Vesuvius, 3,900 feet.....	40 49	14 26	Cape Rizzuto*.....	38 57	17 1
Castellamare*.....	40 41.5	14 28.25	Cape Nau or Colonna.....	39 6	17 14
Point Campanella*.....	40 33.0	14 19.5	Point de Tronta, Tower.....	39 35	16 47
Capri Isle, South Point*.....	40 32.0	14 11.75	Roseto.....	39 59	16 34
Salerno.....	40 40	14 45	Taranto Citadel.....	40 27	17 14
Cape Licosa.....	40 14	14 53	Cape St. Vito*.....	40 24	17 13
Point Spartimento.....	39 59	15 15	Gallipoli, St. Andrea Isle, N. Pt.*	40 3	17 56
Policastro.....	40 1	15 33	Cape Leuca, Church.....	39 47.9	18 22.65
St. Eufemia.....	39 3	16 15	Cape Otranto, Telegraph.....	40 8.7	18 30.0
Cape Vaticano, Tower.....	38 27.2	15 52	Brindisi,* Castello di Mare.....	40 39.4	17 55.6
Gioja.....	38 24	15 56	Monopoli* Telegraph.....	40 57.3	17 18.55
Scylla.....	38 14.5	15 45.0	Mola, Telegraph.....	41 3.9	17 6.0
Lipari Isles, Stromboli.....	38 46.7	15 13.75	Bari,* Belfry.....	41 7.9	16 52.6
Lipari Isle, Church.....	38 29.3	14 56.25	Barletta,* Telegraph.....	41 19.4	16 17.75
Vulcano Isle, Sulphur Works....	38 23.3	14 56.0	Manfredonia, Telegraph.....	41 37.9	15 55.25
Alicudi Isle, Church.....	38 32.7	14 16.5	Varano, Tower.....	41 55.0	15 48.25
Ustica Isle, N.E. Point, Fort....	38 43.3	13 11.25	Termoli, Telegraph.....	42 0.4	15 0.25
Faro Isle, East extremity*.....	38 15.8	15 41.25	Vasto Ammone, Belfry.....	42 6.8	14 42.9
Messina*.....	38 11.0	15 34.75	Ortona, Belfry.....	42 21.5	14 24.4
Milazzo*.....	38 16.1	15 14.0	Pescaro, Tower.....	42 27.0	14 13.8
Cefalu, Signal Station.....	38 2.2	14 1.75	Tronto River, Torre Nuova.....	42 54.4	13 54.8
Termini, Fort.....	37 57.5	13 41.0	Fermo, Cathedral.....	43 9.9	13 43.6
Palermo Observatory, S.M.	38 6.6	13°21' 20"	Pianosa Isle, Signal, East end....	42 13.7	15 45.1
Palermo*.....	38 8.2	13 22.25	Pelagosa Isle, Signal, West Point.	42 23.7	16 15.8
Maritimo Isle, North Point, Castle	37 59.5	12 4.0	Conero Mount, Telegraph.....	43 33.3	13 36.5
Trapani, Columbara*.....	38 1.8	12 31.25	Ancona, Mole Head*.....	43 37.7	13 30.2
Marsala, Cathedral*.....	37 47.8	12 26.25	Sinigaglia,* Cathedral.....	43 43.0	13 12.9
Mazzara, Cathedral.....	37 38.7	12 35.5	Fano*.....	43 51.3	13 0.9
Cape Sorello, or Granitola*.....	37 33.9	12 38.0	Pesaro*.....	43 55.7	12 54.4
Cape San Marco, Fort, Tower....	37 29.3	13 0.5	Rimino,* Casa Garimpi.....	44 3.8	12 33.8
Cape Bianco, Tower.....	37 22.4	13 16.5	Cesenatico*.....	44 13	12 24
Girgenti, Mole**.....	37 15.6	13 31.75	Cervia,* Città Tower.....	44 15.8	12 20.9
Palma, Marina.....	37 8.8	13 43.25	Ravenna,* Città Tower.....	44 25.3	12 11.9
Alicata, Castle*.....	37 4.0	13 56.0	Po di Maestra, Battery.....	44 59.5	12 26.0

X. AUSTRIA, GREECE.		Lat. N.	Long. E.	TURKEY, S. RUSSIA.		Lat. N.	Long. E.
Venice, San Marco.....	45	25.9	12 20.15	Cerigotto Isle, Summit.....	35	50.1	23 18.0
Grado,* Church.....	45	40.3	13 22.9	Spessia Isle, 812 feet.....	37	15.3	23 8.75
Trieste, Castle Clock.....	45	38.6	13 46.2	Napoli di Romania.....	37	33.6	22 48.0
Cape d'Istria, San Lazzaro Belfry.	45	32.7	13 43.6	Hydra, Summit, 1,939 feet.....	37	19.5	23 28.0
Point Bassania *.....	45	27.3	13 28.9	Poros Isle, St. Nicolaus.....	37	30.9	23 28.25
Port Pirano, San George's Belfry.	45	31.6	13 33.9	Egina Isle, Mount St. Elias.....	37	41.9	23 30.0
Rovigno,* Steeple.....	45	4.9	13 37.7	Megara, Tower.....	37	59.8	23 20.5
Pola, San Francesco Belfry.....	44	52.3	13 50.4	Piræus *.....	37	56.2	23 38.0
Cape Promontore,* Mt. Gradina.	44	48.8	13 54.3	Athens, Parthenon.....	37	58.1	23 43.75
Mount Maggiore, Signal.....	45	17.2	14 11.9	Cape Colonna, Temple.....	37	38.8	24 1.75
Fiume, Clock Tower.....	45	19.6	14 26.33	Macronisi Isle, South Point.....	37	38.5	24 6.75
Porto Re, Castel Nuovo.....	45	16.7	14 33.8	Cape Marathon.....	38	7.1	24 3.75
Cherso, Cathedral.....	44	57.7	14 23.8	Zea Isle, Mount St. Elias.....	37	37.3	24 21.75
Unie Island, Church.....	44	38.3	14 14.1	" Port St. Nicolao *.....	37	39.4	24 20.0
Lossini Isle, Mount d'Osero.....	44	40.5	14 21.5	Thermia Isle, Summit.....	37	26.2	24 23.75
Sansego Isle, Mount Garbe.....	44	30.9	14 7.9	Piperi Isle, Summit.....	37	18.2	24 32.0
Premuda Isle, Summit Signal.....	44	20.2	14 36.5	Siphanto Isle, North Point.....	37	2.7	24 38.5
Nona, Cathedral.....	44	14.6	15 10.8	Milo, Mount St. Elias.....	36	40.5	24 23.5
Lunga Isle, Port Tajer, Tajer Rock	43	51.9	15 11.3	Policandro Isle, Summit.....	36	37.1	24 55.25
Zara, San Simone Steeple.....	44	6.8	15 13.5	Nio Isle, Summit.....	36	42.7	25 21.0
Spalatro, Cathedral.....	43	30.4	16 26.3	Santorin Isle, Mount St. Elias.....	36	22.0	25 28.75
St. Andrea Isle, Summit.....	43	1.6	15 45.23	Amorgo Isle, Summit near middle	36	50.7	25 55.75
Pomo Islet, Summit.....	43	5.4	15 27.4	Stampalia, S.W. Summit.....	36	32.2	26 19.75
Lissa, Mount Hum, Signal.....	43	1.7	16 6.63	Naxos Isle, Mount Zia, 3,290 feet	37	1.8	25 31.25
Lagosta 1.,* Mt. San Giorgio, Chap.	42	45.0	16 51.5	Paros Isle, Mount St. Elias.....	37	2.7	25 11.5
Cazza Isle, Summit, Signal.....	42	46.0	16 30.63	Syra Isle, Gaidaro *.....	37	25.5	24 39.0
Meleda Isle, Port Palazza, Palace.	42	47.0	17 22.6	Tinos Isle, Summit, East part.....	37	35.0	25 14.5
Ragusa, Fort on Mole.....	42	38.3	18 6.63	Andros Isle, Mt. Kovari, 3,900 ft.	37	50.1	24 50.5
Port Ostro *.....	42	22.8	18 30.6	Negropont, Fort Karababa.....	38	27.7	25 35.25
Cattaro, Sanità.....	42	25.4	18 46.0	" Cape Doro, Islet off.....	38	9.4	24 36.3
Antivari, South Point.....	42	2.3	19 6.15	" Cape Koumi.....	38	38.7	24 9.7
Dulcigno, Mole.....	41	53.8	19 10.4	Volo, Fort.....	39	24.0	22 56.5
Durazzo, Mole.....	41	17.5	19 26.3	Skyros Isle, Summit.....	38	49.7	24 37.25
Aulona, Dogana.....	40	27.2	19 26.06	Skopelos Isle, Summit.....	39	8.2	23 42.0
Cape Linguetta, 2,290 feet.....	40	26.7	19 17.0	Skiathos, Summit.....	39	10.4	23 29
Palermo, Fort.....	40	2.9	19 47.9	Mount Pelion (Patras), 5,310 feet	39	26.5	28 3
Fano Isle, S.W. Summit.....	39	50.2	19 19.5	Mount Ossa (Kissova), 6,407 feet	39	48.0	22 42.0
Oortu,* Lighthouse.....	39	37.6	19 56.2	Salonika.....	40	38.8	22 57.25
" Vido, Landing Cove.....	39	38.7	19 56.2	Cape Cassandra.....	39	56.7	23 23.0
" Lefchimo Point *.....	39	28.1	20 4.0	Cape Pailiri.....	39	55.2	23 45.25
Parga, Citadel.....	39	16.4	20 23.0	Cape Drapano, 880 feet.....	39	56.5	23 57.25
Preveza, Fort Giorgio.....	38	56.2	20 44.2	Mount Athos, Summit, 6,349 feet	40	9.5	24 20.0
Paxo Isle, Laka *.....	39	13.2	20 9.0	Thaso Isle, Summit.....	40	41.7	24 42.75
" Port Gajo *.....	39	11.5	20 12.5	Enos.....	40	42.0	26 5.0
Antipazo Isle, East Point.....	39	8.7	20 5.75	Xeros Isle.....	40	36.5	26 44.0
Santa Maura *.....	38	50.5	20 42.75	Samothraki, West Point.....	40	28.2	25 27.0
" S. extr. Cape Ducato.....	38	33.5	20 32.75	Lemnos, West Point.....	39	58.7	25 2.0
Cephalonia, North extremity.....	38	28.5	20 33.0	Imbros, West Point.....	40	7.2	25 40.0
" Port Argostoli, Hook Point.....	38	11.2	20 28.5	Dardanelles, Asia Castle.....	40	9.0	26 24.5
" South Point, Cape Skala.....	38	3.0	20 46.5	Gallipoli *.....	40	24.0	26 39.75
Zante, North Point, Cape Skinari.....	37	56.5	20 41.5	Constantinople, St. Sophia.....	41	0.3	28 59.25
" South Point, Cape Kieri.....	37	38.5	20 49.5	Bosphorus, Europe *.....	41	14	29 7.25
" Port *.....	37	47.5	20 55.0	Varna, Mosque.....	43	12.0	27 56.5
Krio Nero *.....	37	48.7	20 54.5	Cape Shabler *.....	43	32.7	28 37.7
Ozia Isle, Peak, 1,247 feet.....	38	18.7	21 7	Danube River, Soulineh Mouth *.	45	8.3	29 40.5
Messalonghi.....	38	21.9	21 25.75	Serpents' Isle *.....	45	15.5	30 14.2
Roumelia, Castle.....	38	19.5	21 46.25	Tsaregradskoe Mouth *.....	46	4.8	30 29.75
Lepanto, Centre, Minaret.....	38	23.4	21 50.0	Cape Fontane *.....	46	22.8	30 44.5
Corinth, Acropolis.....	37	53.4	22 52.75	Odessa, Cathedral.....	46	28.9	30 45.5
Morea Castle, Centre.....	38	18.5	21 47.0	Kinbourn *.....	46	35.4	31 29.25
Patras.....	38	14.5	21 44.75	Nicolaeff, Observatory.....	46	58.2	31 58.0
Cape Papas, Ruined Fort.....	38	12.7	21 23.5	Kherson, Cathedral.....	46	37.7	32 38.0
Cape Charenza, Ruin.....	37	56.5	21 9.5	Cape Eakiforos *.....	45	20.7	32 29.7
Cape Katakolo.....	37	37.7	21 19.0	Eupatoria.....	45	11.7	33 21.75
Stamfanes Isle *.....	37	15.3	21 1.5	Cape Khersones *.....	44	35	33 22.25
Cape Koanelo.....	37	10.4	21 35.5	Sebastopol, Church.....	44	37.9	33 29.5
Navarinio, Mosque.....	36	54.6	21 41.75	Cape Aitodor *.....	44	25.3	34 7.7
Modon *.....	36	48.4	21 41.5	Kaffa, or Theodosia.....	45	1.6	35 24.0
Cape Gallo.....	36	42.9	21 52.75	Cape Takli *.....	45	5.9	36 27
Cape Kephali.....	36	53.5	22 8.0	Yenikaleh *.....	45	23.1	36 39.25
Cape Grosso, Summit.....	36	29.1	22 22.25	Cape Berdianski *.....	46	38.2	36 48.25
Cape Matapan.....	36	23.0	22 29.2	Taganrog, St. Michael Church...	47	12.2	38 57
Eurotas River, Mouth.....	36	48.2	22 41	Anapa, Church.....	44	54.1	37 18.5
Cerigo Isle, South extremity.....	36	7.7	22 59.75	Soukoun Kaleh, Fort.....	42	59.3	40 59.75

XI. AFRICA.		Lat. N.	Long. E.	AFRICA.		Lat. S.	Long. E.
Nile, West or Old Boghaz Mouth	31 30.5	30 25.75		Cape Lopez	0 36.0	8 43	
Rosetta, English Consulate	31 24.3	30 28.0		River Loango, Entrance	4 39.5	11 45	
Damietta	31 25	31 47		Congo or Zaire River, S. Entrance	6 4.6	12 15	
Cairo, Tower of Janissaries	30 2.1	31 15.5		San Paolo de Loando	8 48.1	13 13.5	
Aboukir Castle	31 20.5	30 5.75		San Filippo de Benguela	12 33.9	13 24	
Alexandria, Point Eunostos *	31 11.5	29 51.5		Cape Negro, Diaz's Pillar	15 40.7	11 58	
Ras el Kannis	31 17	27 53		St. Helena Bay, West Point	32 42.2	17 54.25	
Derna Marabout	32 46.0	22 40.75		Saldanha Bay, Schapen Isle, W. Pt.	33 4.2	18 1.0	
Marsa Sousa, Arsenal	32 54.9	21 56.5		Table Bay, Green Point **	33 54.2	18 24.5	
Benghazi, Castle	32 6.8	20 2.75		Devil's Peak, 3,315 feet	33 57.2	18 31.75	
Tripoli, Pasha's Castle	32 53.9	13 11.0		Cape Observatory, S.M.	33 56.0	18 28.45"	
Monastir, Fort Ghadir	35 45.4	10 49		Simon's Bay, Dockyard	34 11.3	18 26.0	
Cape Bon	37 4.8	11 3.5		Cape Agulhas *	34 49.7	20 0.75	
Pantellaria Isle	36 51.2	11 54.75		Cape Recife *	34 1.0	25 41.75	
Tunis, Fondouc	36 48.0	10 24.25		Algoa Bay, Commandant's House	33 57.5	25 39.5	
Cape Carthage *	36 52.4	10 20.25		" St. Croix Isle, Peak	33 47.6	25 46.5	
Bona, Lion Point *	36 54.5	7 46.3		Bird Isle, East Point **	33 52	26 14	
Ras el Hamrah *	36 58.0	7 47.3		Cape Natal	29 53.0	31 2.25	
Philippeville *	36 52.8	6 52.8		Delagoa Bay, Cape Collato	26 4.0	33 1.0	
Zrigina Isle *	36 56	6 52		Cape Corrientes	24 7.5	35 30.5	
Cape Boujaroun, North Point	37 6.3	6 25.8		Sofala River, Fort	20 10.7	34 46.0	
Djidieli *	36 50.0	5 43.8		Quillimane or Zambesi R., N. Point	18 1.4	37 1.5	
Bongie *	36 45.5	5 4.3		Mozambique, St. George's Isle	15 2.2	40 48.5	
Cape Carbon (provisionally) *	36 47	5 5		Cape Delgado	10 41.2	40 39.75	
Dellys, N.W. part of City *	36 55.5	3 55.0		Zanzibar, South Point	6 27.7	39 33.0	
Algiers, Mole *	36 47.3	3 4.3		Madagascar, S. extr. C. St. Mary	25 38.9	45 7.0	
Cherchel, Fort *	36 36.8	2 11.8		Cape St. Vincent	21 54.4	43 20.5	
Cape Tennez *	36 32.0	1 20		N.W. extremity, Cape St. Andrew	16 11.4	44 31.0	
Mostagenem *	35 56.0	0 5.3		Noss Beh, North Point	13 12.2	48 18.75	
	Lat. N.	Long. W.		North extremity, Cape Amber	11 57.5	49 19.0	
Arzeu Fort *	35 51.7	0 17.2		East Cape, outer Island	15 15.8	50 31.5	
Cape Ferrat	35 54.3	0 22.7		St. Marie Isle, Quail Isle, Estabmt.	17 0.0	49 54.0	
Oran *	35 44.3	0 41.2		Europa Isle, Bassas da India	22 22.5	40 24.25	
Cape Tres Forcas	35 28	3 0		San Juan da Nova	17 3.5	42 50	
Ceuta *	35 54	5 18		Johanna, Town	12 11.0	44 25.1	
Tangier, Consul's House * ?	35 47.2	5 48.5		" Peak, East Part	12 15	44 27.1	
Madagascar, East Point	32 43.4	16 39.5		Comoro, S.E. Point	11 54	43 33	
Funchal, British Consulate S.M.	32 37.7	16 54.45"		Glorioso Isles, West one	11 34.8	47 24	
Teneriffe, Santa Cruz, Brit. Cons.	28 28.2	16 14.75		Assumption Isle, Hummock, S.E. Pt.	9 46	46 34	
Ferro, West extremity of Canaries	27 42.5	18 9.7		Aldabra Isles, N.W. Point	9 23	46 12	
Azores, St. Michael, Delgada *	37 44.2	25 40.7		Mauritius, Pt. Louis, Cooper's L.S.M.	20 9.7	57 31.45"	
Pt. Ferraria, * W. Pt. St. Michael	37 51.7	25 52.2		" Grand Port, Queen's Batt.	20 22.6	57 45.75	
Terceira Angra, Custom House	38 38.9	27 13.75		" Peter Botte, 2,600 feet	20 11.7	57 36.75	
Cape Verde, St. Antonio, N. Point	17 12.0	25 5.75		Bourbon, St. Denis **	20 51.5	55 29.75	
St. Vincent, Porto Grande, Bird Isle	16 54.7	25 1.25		" Point of Bel Air *	20 53.2	55 38.75	
Mogador, West Coast of Africa	31 30.5	9 46.25		Rodriguez Isle	19 41	63 25	
Cape Blanco	20 46.5	17 4		Bank of Nazareth, Cocoa Isle	16 48.9	59 32.75	
Senegal, St. Louis *	16 0.8	16 33.0		Tromelin Isle	15 52	54 37	
Cape Verd, extremity	14 43.1	17 34		Saya da Malha Bank	8 35	59 58	
Goree Isle *	14 39.9	17 24.5		Agalegas Isles and Reef	10 21.5	56 38	
River Gambia, Bathurst, Flag-st.	13 28.0	16 35.0		Farquhar Isles, North Point	10 7	51 8	
De Los Isles, Crawford, Eng. Estab.	9 27.4	13 48.0		S ychelles, N. extremity, Bird Isle	3 42.7	55 15.75	
Cape Sierra Leone *	8 30.0	13 18		" E. extremity, Frigate Isle	4 35.2	56 1.25	
Freetown, North Battery	8 29.9	13 14.5		" Mahé Isle, Victoria	4 37.5	55 30.25	
River Gallinas, Kamasoun Isle, West Elbow	7 0.1	11 38.75		Almirante Isles, West extremity	6 6	52 58	
Monrovia, Government House	6 19.1	10 49.0		" S. extremity, Isle de Neuf	6 13	53 13	
Bassa, American Agent's House	5 54.1	10 4.0		Isle Platte	5 49	55 28	
River Sanguin, Point Sanguin	5 12.7	9 20.2		Chagos, Salomon Isles, L. de Passe	5 18	72 12.75	
Cape Palmas *	4 22.1	7 44.25		Di go Garcia, East Entrance	7 13.5	72 23.0	
Cape Coast Castle *	5 5.4	1 13.75			Lat. N.	Long. E.	
Accra, Fort James	5 31.8	0 11.5		Megadoxo, East Coast of Africa	2 1.8	45 24.7	
Lagos, East Point	6 26	3 26.25		Ras al Khyl	7 43.7	49 46.0	
River Benin, N.W. Point	5 46.0	5 4		Ras Haftin, East Point	10 27.0	51 22.3	
River Forcados, Entrance, S. Pt.	5 22.0	5 19.25		Ras 'Asir, East Point	11 50.5	51 16.1	
River Quorra or Niger, E. Point	4 17	6 4		Socotra, Gollonsir, Mosque	12 41.3	53 29.4	
River Bonny, East Point	4 23	7 8		" E. extremity, Ras R'dresseh	12 24.3	54 30.75	
Old Calebar, Tom Shot's Point	4 36	8 19		" Tamarida, Mosque	12 39.0	53 59.25	
Cape Cameroons	3 55	9 30		Meyet, or Burnt Isle, Centre	11 13.0	47 13.9	
Fernando Po, Clarence Cove, Adelaide Isle	3 46.0	8 47.5		Berbereh, extr. of Sandy Point	10 26.3	44 57.6	
Ascension, Barrack Square	7 55.5	14 25.5		Ghubbet Kharab, Entrance Islet	11 33.0	42 39.7	
St. Helena, Observatory	15 55.0	5 44.0		Perim Isle, Lighthouse *	12 39.0	43 20.1	
Tristan d'Acunha, Waterfall N. s.	37 1.9	12 17		Suakim	19 7	37 20	
				Jubal Isle, East Summit	27 37.7	33 48.0	
				Suez	29 58.6	32 34.25	

XII. ASIA.		Lat. N.	Long. E.	ASIA.		Lat. N.	Long. E.
Trebisonda, E. extremity	41	1.0	89 40.0	Cyprus, Larnaka, Consulate ...	35	55.2	33 37.75
Cape Yazon	41	8.5	37 41.5	" W. extr. C. Epiphanius ..	35	6.3	32 14.5
Samsoun, N. extremity City	41	18.2	36 21.25	" N.E. extr. C. Andrea ..	35	41.7	34 35.5
Sinope, Castle	42	2.2	35 12.5	" S'most extr. C. Gatto ..	34	32.8	32 59.75
Cape Kerempeh, N.W. Point	42	12	33 17.25	Toor, Harbour	28	14	33 36.25
Penderekli *	41	17.1	31 27	Jubal Isle, East Summit	27	37.7	33 48.0
Kephken Adassi Isle, Fort	41	13.2	30 17.5	Kosseir, Town	26	6.8	34 16.25
Asia *	41	13.0	29 9.4	Tirahu Isle, Peak	27	55.2	34.34
Tenedos, Cape Baba Fort	39	28.2	26 4.5	Moilah, High Peak, 9,000 feet ..	27	37	35 45
Mount Ida, 5,750 feet	39	42.0	26 50.5	Palinurus Reefs	24	6	37 7
Mitylene, East Point	39	0.7	26 37.7	Jeddah, Mosque E'ward of Town ..	21	28.3	39 13.0
" Mount Olympus, 3,079 ft ..	39	4.2	26 22.0	Mosha	13	20	43 12.0
" West Point, Cape Sigri ..	39	10.7	25 50.0	Bab-el-Mandeb, Peak	12	41.2	43 23.75
Smyrna, Mill on Daragaz Pt., S.M. ..	38	26.5	27.0 9.42"	Ras 'Arah, Low Point	12	37.5	43 53.28
Vourla Scala, Fountain	38	21.7	26 47.5	C. St. Antonio, S. Bluff, 2,085 ft. ..	12	41.0	44 7.6
Cape Karabournou, Point	38	39.9	26 22.75	Ras K'au, Cape	12	39.7	44 24.1
Scio, North Summit	38	38.7	26 1.25	Mount Hasan, Sugar-loaf	12	44.8	44 50.25
Venetico Isle, off S. Point of Scio ..	38	8.0	26 2.0	Ras Majallah Haldi	12	43.1	44 50.6
Ipsara, Fort at South Point	38	32	25 35	'Aden, Back Bay, Steamer Point ..	12	46.6	44 57.6
Cape Blanco	33	16.6	26 14.75	Mount Shamshan, Summit	12	45.5	44 59.6
Cape Koraka	38	6.5	26 36.75	Cape 'Aden, South Point	12	45.1	45 0.6
Scalanova, Kooah Isle	37	52.0	27 16.5	'Aden, North Point of Sirah Isle ..	12	46.25	45 1.3
Samos, West Summit	37	43.8	26 38.5	Sugbra, Sheikh's Castle	13	21.5	45 37.6
" South Point, Cape Colonna ..	37	38.3	26 52.7	Mount Fudhli, West Summit ..	13	31.5	45 50.6
Nicaria, West Point	37	31.2	25 59.5	Maghatain, Point	13	24.5	46 23.6
" Beacon, 3,390 feet	37	32.2	26 4.7	Mount Hism Ghorab, East Point ..	13	59.3	48 16.1
Gaidaro, Summit	37	28.1	26 58.75	Makalleh, Government House ..	14	13.7	49 3.25
Arki, North Point	37	24.9	26 44.5	Ras Sharmah, Point	14	48.5	49 53.9
Patmos, Prasos Isle, South Point ..	37	16.0	26 34.75	Merbat, Town	16	59.0	54 38.6
Lipso, S.W. Point	37	18.2	26 44.25	Hallaniyah Isle, N.E. Bluff ..	17	32.7	56 2.45
Lero, Mount Klidi	37	10.7	26 51.5	Cape Isoletta, Islet off	19	0.4	57 48.6
Kalymno, Mount Passiva	36	58.8	27 0.0	San Carlos Banks, S.W. extremity ..	19	20.0	57 48.6
Mount Samsoun	37	39.8	27 9.0	" N.E. extremity ..	19	32.5	58 4.9
Cape Monodendri, Ruin	37	21.3	27 13.0	Hamar-al-Nafur Isle	19	47.6	57 46.3
Kos, West Point	36	43.0	26 49.5	Palinurus Bank, South Point ..	19	49.5	58 14.9
Nicero, Summit, 2,270 feet	36	35.2	27 11.0	Ras Abu-rasas, Masirah Isle ..	20	10	58 36.45
" West Islet off, North Point ..	36	35.6	27 3.5	Ras Shebali	20	57.5	58 47.9
Piccopia, Summit	36	26.1	27 21.0	Perissa Gulf, Ras-al-Hed	22	32.6	59 47.9
Karki, S.W. Point	36	12.2	27 33.25	Ras Jibah	21	27.5	59 21.5
Rhodes *	36	26.9	28 16.25	Ras Abu Daud, Rocky Point ..	23	19.1	58 55.5
" W. Point, Cape Monolitho ..	36	8.7	27 43.25	Maakat, Saddle Hill, 1,340 feet ..	23	35.1	58 35.05
" S. Point, C. Prasos Nisi ..	35	52.4	27 47.0	Mount Nakli, Gt. Peak, 6,270 ft. ..	23	25.0	57 56.8
Khina Isle, Rock	35	51.2	27 56.0	Ras Jashk, Tomb on Point	25	38.0	57 46.2
Scarpanto Isle, South Point	35	23.5	27 10	Great Quoin, highest part	26	30.0	56 30.9
Candia, Town, Minaret *	35	21.0	25 8.25	Ras-al-Kuh, extreme S. of Creek ..	25	47.4	57 18.8
" Cape Krio	35	16	23 31	Kuh-i-Mubarek	25	50.6	57 18.73
" Sordi Isle	35	34.3	23 27.25	Ummal Fyarin, highest part ..	26	10.8	56 33.1
" N. extremity Cape Spada ..	35	40.5	23 44.25	Hormuz, S.E. Bastion, Fort	27	5.8	56 27.6
" Khania *	35	30.8	24 0.0	Bander Abbas, S.W. Bastion ..	27	10.5	56 17.0
" Cape Meleka	35	35	24 8.5	Henjam Isle, White Mosque	26	40.8	55 53.9
" Cape Sidera, Summit	35	17.7	26 18.75	Basiduh, Portuguese Chapel	26	29.2	55 16.3
" E. extremity C. Salomon ..	35	9.2	26 19.5	Mt. Bostaneh, Tower Pk., 1,750 ft. ..	26	32.9	54 41.7
" Christiana Isles, S'most ..	34	53.1	26 7.7	Tumb I., N.E. Corner, Hummock ..	26	16.2	55 19.7
" Cape Matala	34	55.1	24 45.25	Kais Isle, West Point	26	32.7	53 54.4
" Mount Ida	35	13.3	24 47.0	Sheikh Sho'aib, West Point	26	50.4	33 9.6
" Sphakia	35	14	24 13	Ras Nabend, Tree above	27	21.3	52 37.9
Gozzo Isle, West Point	34	52.0	24 2.2	Asluf Notch, 4,870 feet	27	33.6	52 37.7
Boudroom, Castle	37	2.0	27 27.5	Barn Hill, 4,660 feet	27	48.0	52 13.9
Cape Crio, West Point	36	41.0	27 23.5	Assee' Ears, South Peak, 2,500 ft. ..	28	29.0	51 11.7
Makri, Theatre	36	37.2	29 9.75	Bu-shehr, British Flag-staff ..	28	59.1	50 50.05
Khelidonia Isle, South Islet	36	9.5	30 28.25	Khareg Isle, Flag-staff	29	15.4	50 20.6
Adalia, South Pier Head	36	52.2	30 45	Basrah, Ma'kil, Consulate	30	34.0	47 48.9
Cape Anamour	36	0.8	32 49	Koweit, Hill Fort to S.E.	29	16.9	48 3.5
Cape Cavaliere	36	7.5	33 43.7	Karachi, Minorah Point *	24	47.3	66 58.2
Lamas River	36	33.8	34 17.75	Diu, Town, Flag-staff	20	42.3	71 0.1
Alexandretta, Consulate Flag-staff ..	36	35.3	36 9	Perim Isle *	21	35.3	72 20
Cape Possidi	35	52.2	35 49.0	Vaux's Tomb, Taptes *	21	5.7	72 37.6
Latakia *	35	30.5	35 46.0	Bombay, Observatory, S.M.	18	53.7	72.0 48.45
Bairout, British Consulate	33	54.5	35 28.25	" Lighthouse *	18	53.7	72 48.75
Sidon, Castle	33	34.1	35 21.75	New Goa, St. Ann's Light *	15	28.3	73 52.1
St. John d'Acre, Bastion Mar. Gate ..	32	55.0	35 2.5	Mangalur, Flag-staff	12	52	74 49.9
Cape Carmel	32	51.2	34 57.7	Kananur, Point, Flag-staff	11	51.2	75 21.65
Ascalon, Ruins	31	39.0	34 31.0	Tellicherri *	11	44.9	75 29.15
El Arish	31	5.5	33 55.75	Kolikod, * Flag-staff	11	15.2	75 46.4

XIII. ASIA.	Lat. N.	Long. E.	ASIA.	Lat. N.	Long. E.
Trevandrum Pagoda	8 29.0	76 55.8	Kalantan, Entr. of R. to E—d.	6 11.9	102 20.8
Cape Kumarin, Peak	8 23.2	77 30.5	Cape Patani, N.E. Point	6 58.0	101 18.6
Colombo *	6 56.1	79 49	Singora, Pulo Ticos, S.W. Pt. .	7 13.9	100 36.2
Point de Galle, * Ceylon	6 1.8	80 13	Koh Krah, S.E. Point	8 24.8	100 45.5
Adam's Peak, 7,000 feet	6 52	80 29	Sing I., White Rock, East side, .	11 3.7	99 31.4
Trincemali, * Fort Frederick ..	8 36	81 14	Bangkok, Patnam Flag-staff ..	13 35.9	100 35.6
Laccadives, Padua Bank, N.Pt. .	13 37	72 32	C. Liant, Messa I., N.W. Rock .	12 35.1	100 56.9
East extrem. Elikalpeni Bank ..	11 13	73 56	Luemor Pilot Isle, Peak	12 57.5	100 39.0
Seuheli Par, South extremity ..	9 56	72 9	Chentaban River, Chula Isle ..	12 27.7	102 4.4
Minicoy, betw. 8° & 9° Channels .	8 17	73 3	Pulo Obi, Square Rk., S.W. Pt. .	8 25.6	104 48.8
Maldives, North extremity	7 6	72 53	Pulo Panjang, S.W. Bay	9 18.2	103 28.2
S. extr. Addoo Atoll, Gung I., E. Pt.	0 41.5 S	73 6	Rocky Isle, Kamput, Centre ..	10 27.9	104 11.9
Nagapattam, Flag-staff	10 45.6	79 50.25	Tecksou, N.W. side	9 57.2	104 49.1
Tallangambadi (Tranquebar) ..	11 1.5	79 50.25	Cape St. James	10 17	107 5
Kudalur, Town and River	11 43.5	79 46.0	False Cape, Varela, Camraah ..	11 44	109 12
Pudicheri * (Pondicherry)	11 55.7	79 49.5	Quinhone Harbour, Entrance ..	13 44	109 14
Madras, Observatory, S.M.	13 4.1	80°14'19" S	Pulo Condore Isles	8 40	106 41
„ Light, Fort St. George	13 4.7	80 16.5	Hainan, Tinhosa Isle	18 39.7	110 27.4
Pulicat, Flag-staff	13 25.1	80 18.25	Taya Isles, North Isle	19 58.8	111 16.0
Point Divy *	15 57.5	81 11	„ South Isle	19 48	111 11.4
Godavari Point *	16 48	82 18	Hailingshen I., Twins at S.W. Pt.	21 34	111 49.5
Vishakpatnam, Battery	17 40 8	83 16.75	Grand Ladrone	21 57	113 42.5
Point *	20 19.4	86 44	Macao, Flag-staff	22 11.4	113 31.2
Mypurra Isle, South Point	20 41.3	87 7.25	Canton, English Factory	23 6.9	113 14.2
Pilot Ridge *	20 50	87 39	Hong Kong, Point Albert, S.M. .	22°16'27"	114° 9'57"
East Channel *	31 3	88 12	„ Kowloon Point, W. Battery .	22°17'20"	114° 9'22"
Kedjeri *	21 50.3	87 56.0	Raleigh Rock	22 2.0	113 46.2
Sangor Isle, * West Point	21 38	88 1	Ninepin Rock	22 15.7	114 21.3
Calcutta, Fort William, Fl.-st. .	22 33.5	88°19' 40"	Mendoza Island, Summit	22 30.7	114 49.2
Chittagong, or Islamabad, Fl.-st.	22 20	91 48.0	Pedro Blanco Rock	22 18.5	115 6.1
Kutubdea Isle *	21 52.6	91 50.25	Chino Peak	22 44.4	115 46.0
Elephant Point	21 10	92 3	Cupchi Point, Hill	22 48.1	116 3.5
Mosque, or Fakir's Point *	20 6.7	92 54.0	Cape of Good Hope	23 14.0	116 46.2
Akyab Harbour, Flag-staff	20 8.4	92 54.25	Tongsang Harbour, Fall Peak .	23 47.3	117 36.0
Great Savage *	20 5.2	92 54.0	Amoy Isle, Citadel	24 28.0	118 8.2
Kyok Phyu, Flag-staff	19 26.4	93 32.75	Dodd Island, Summit	24 26.3	118 28.3
Cape Negrais	16 1.5	94 12	Chin-chu Harbour, Pisai Isle ..	24 49.2	118 40.2
Andamans, Prepara Isle, N. end .	14 56	93 38	Lam-yit Isle, High Cone	25 12.0	119 34.2
Little Andaman, South Point	10 26	92 38	Haitan Isle, Kiangshan Peak ..	25 36.3	119 49.9
Cor Nicobar, S. of 10° Channel .	9 10	92 46	River Min, Temple Point	26 8.4	119 36.9
Great Nicobar, South Point	6 45	93 54	Changchi Isle, highest Peak ..	26 14.0	120 0.9
Rangoon, Dagon Pagoda	16 47	96 10	Tungying Isle, Peak	26 23.2	120 30.8
Amnerst	16 5	97 33	Double Peak Isle, highest	26 36.1	120 10.4
Merguis, St. Matthew's I., Sum. .	9 58.0	98 11.25	Tao Isles, Eastmost	26 59.2	120 43.0
„ Hasting's Harbour, Peak	10 5.1	98 11.0	Pihquan Peak	27 18.8	120 28.0
Junk Seilon, or Salang I., S. Pt. .	7 46	98 18	Namquan Harbour, Bate Isle ..	27 9.3	120 25.0
Achin Head, or King's Point	5 36	95 11	Port Namki, East Horn	27 20.3	121 5.8
Diamond Cape	5 14	97 38	Tai-chau Islands, Heachu Isle ..	28 23.3	121 54.4
Penang I., George, Ft. Cornwallis .	5 25.1	100 20.25	Chuh-seu Isle, Summit	28 40.5	121 46.6
Malacca, * Flag-staff	2 10.5	102 15	Kweshan Isles, Patahecock	29 21.9	122 12.9
Singapore, Fort Fullarton	1 17	103 51' 18"	Buffalo's Nose Isle, Summit ..	29 36.2	122 0.6
Pedra Branca, Horsburgh *	1 20	104 26	Nimrod Sound, Middle Isle	29 34.3	121 42.5
Tambelan Isles, Great Tambelan .	1 0	107 35	Chusan Isle, Tinghae—Ob. Spot .	30 0.4	122 4.5
Anambas, N.E. extreme	3 15	106 35	Chukea Isle, Peak	29 54.0	122 24.5
Natunas, S. extrem. Sededap Isle .	3 34	108 1	Cairnsmore Rock	30 42.2	122 33.8
Great Natuna, North Point	4 16	108 12	Chapu, Battery	30 36.0	121 2.2
Labuan Isle, West Point	5 15.1	115 7	Yung River, Chinhai Citadel ..	29 57.1	121 42.3
Kuching Hill, Entr. Sarawak R. .	1 33.4	110 22	Shaweshan Isle, Summit	31 25.2	122 13.2
Balabac Isle, South Point	7 48	117 52	Wusung River, Fort A	31 23.5	121 29.4
Boulanhaw Hill, North extr.	8 40	117 26	Shanghai, British Cons. Fl.-st. .	31 14.7	121 28.1
Louisa Shoal	6 20	113 18	Hankau, Mouth of Han River ..	30 32.8	114 19.1
Palawan, South extremity	8 20	117 12	Whangho River, Entrance	34 2.0	119 50.2
Manila *	14 35.1	120°57'21"	Wang-kia-tai Bay, Lungwang) .	35 39.0	119 47.2
Bashees, San Domingo, Bantan .	20 27.5	121 28.5	Temple		
Pratas Isle, N.E. part	20 42.0	116 42.6	Staunton I., landing pl. N. side. .	36 45.5	122 12.0
Formosa, Ape Hill	22 38.0	120 15.7	Shan-tung Promontory, extr. .	37 24.5	122 38.2
Port Kok-si-kon, Obs. Point	23 6.0	120 4.8	Lungmun Harbour, Ta-shan ..	37 27.3	121 32.1
Sano Bay (South Point)	24 36.0	121 52.2	Chifa or Yentai, Fort in Vill. B. .	37 35.9	121 21.7
Tamsui Harbour, Sand Point	25 10.1	121 5.3	Miautau Islands, N. Isle, Peak ..	38 23.6	120 51.2
Ruin Rock, Kelung Harbour	25 9.0	121 46.2	„ South extreme	37 56.0	120 36.4
Pescadores, Makung Harb., O.P. .	23 32.9	119 29.4	Talienwhan B., Obs. Spot	38 52.6	121 48.7
Luchu Isle, Deep Bay, Head	26 35.6	127 58.9	Shalutien Isle, Joss House	38 53.0	118 28.2
Siam Gulf, Pulo Kapas, SW. Pt. .	5 13.0	103 16.0	Pei-ho, South Taku Fort	38 59.8	117 38.5
„ Gt. Redang I., Bukit Mara .	5 44.3	103 1.6	Great Wall, at Sea-side	39 58.0	119 45.2

XIV. NORTH PACIFIC.		Lat. N.	Long. E.	NORTH PACIFIC.		Lat. N.	Long. E.
Quelpart Isle, Obs. Spot, W. side of Beaufort Isle.....	33	7	126 57.6	Port Aian, Cape Vneschni.....	58	25.4	138 25.8
Monttravel Isle, Centre.....	33	59.0	126 56.1	Avatcha Bay, East Entrance*..	52	52.5	158 47
Ross Isle, Peak.....	34	6.0	125 6.2	Petropaulski, Church.....	53	0.9	158 43.5
Guérin Isle, Summit.....	36	7.0	126 0.3	Ohosima, N. extreme.....	28	31.7	129 40.2
Marjoribanks Harb., Mauzac I..	38	26.7	126 27.1	Powhattan, Reef.....	30	41.0	130 19.0
Caroline Bay, West Point.....	37	1.5	126 24.2	Bonin Is., Port Lloyd, Peel Isle.	27	5.6	142 10.7
Port Adams, Entry Isle.....	39	16.0	121 31.1	Sebastian Lobos, S.W. Isle.....	25	10.0	146 39.2
Hulu Shan Bay, Obs. Place.....	39	40.8	121 13.2	Lushu Is., Napha, Abbey Point	26	12.4	127 41.7
Liauhö, Yinkoa Pagoda.....	40	43.2	122 9.9	Meiacosima, Port Haddington..	24	25.0	124 5.9
Liauti Shan Prom., S.W. Point.	38	43.0	121 4.2	Volcanos, Sulphur Isle.....	24	48.0	141 13.0
Round Isle, Summit.....	38	40.0	122 9.1	Marshall, or Los Jardines Islands	21	40.0	151 35.0
Thornton Haven, Obs. Spot.....	39	4.0	123 8.2	Ladrones, Asuncion Isle, Peak..	19	41.0	145 27.0
Kuper H., Jostling I., N.E. Extr.	34	17.3	126 34.6	" Seypan Isle, Peak.....	15	13.0	145 49.0
Port Hamilton, Obs. I., W. Pt.	34	1.4	127 17.9	" Guam Isle, Port San Luis.	13	26.0	144 45.0
Simonoseki, Moki Saki, S. Point.	33	58.0	130 57.6	Borodino Islands, South Isle...	25	52.7	131 12.3
Wilson Isle, Summit.....	33	54.5	130 23.5	Luzon, Volcano of Ysarog.....	13	37	123 24
Frando Harbour, Entrance.....	33	23.0	129 27.2	Samar, South and East extreme.	11	2	125 47
Goto Is., Obs. I., Hardy Harbour	32	49.0	128 55.8	Port Mindanao.....	5	39	125 18
Tamanoura, Entrance Harbour..	32	43.5	128 37.0	Soolos, South extreme.....	5	1	119 55
Cape Goto, Extreme.....	32	39.5	128 34.7	Borneo, Banguey, Peak.....	7	29	117 9
Nagasaki, Minage Point.....	32	44.5	129 50.7	Celebes, Manado, Port.....	1	29.5	124 50
Kusa-kaki, Ear's Peak.....	32	8.0	128 24.2	Gilolo, Morty, North Point....	2	44	128 25
Uda-sima, High Peak.....	30	39.0	129 28.2	Pellew Islands, North extremity	8	45	134 5
Cape Chichakoff, Extreme.....	30	39.0	130 43.8	Marshall Islands, East Chain...	11	48	170 7
Obsima Harb. of Kii, Piasayama	33	29.8	135 47.7	" West Chain ..	4	39	168 50
Rock.....	33	33.6	135 54.2	" Chatham, N. Group	9	30	170 16
Urakami Harbour, Village Point	33	33.6	135 54.2	" Mulgrave, S. Point.	6	7	171 57
Simidu Harbour, Miosaki.....	35	0.8	138 30.3	Carolines, Prudences.....	9	31	161 8
Eno-ura Bay, Centre.....	35	3.0	138 51.8	" Mortlock.....	5	29.3	153 58
Mount Fusi-yama.....	35	21.1	138 42.3	Lat. N.	Long. W.		
Cape Idzu, S.E. Extreme.....	34	35.0	138 50.8	Sandwich Is., Honolulu, Fort...	21	18.2	157 55.0
Rock Island, Centre.....	34	34.3	138 56.0	" Hanalei Bay, Brit. Cons.	22	14	159 32.75
Simoda Harbour, Centre Isle...	34	39.8	138 56.3	Christmas Is., S.E. Point.....	1	41	157 15
Yedo Bay, Cape Sagami.....	35	8.0	139 40.8	Galera Point, Columbia.....	0	50.2	80 4.7
Yokohama, West Pier.....	35	26.2	139 58.2	Cape Corrientes.....	5	28.8	77 32.5
Hakodadi Harb., Entr. to Kamida Creek.....	41	47.1	140 43.8	Buenaventura River, Basan Pt..	3	49.5	77 10.8
Cape Matsumae, Islet off.....	41	24.9	140 6.1	Cupica Bay, Cupica River.....	6	41.8	77 29.6
Cape Nambu, Islet on W. side..	41	25.4	141 27.4	Isla del Rey, Cocos Point.....	8	12.5	78 53.7
Red Cliff Point, extremity.....	41	28.1	141 7.8	Cape Mala, Extremity.....	7	27.1	79 59.0
Toriwaki, Low Isle off.....	41	33.6	140 55.4	Panama, N.E. Bastion.....	8	56.9	79 31.9
Tatsupisaki, North side.....	41	16.3	140 21.4	Gulf of Dulce, Cape Matapol..	8	16	83 17
Cape Greig, Rock off South side.	41	5.6	140 19.1	Cape Blanco.....	9	32	85 7
Fatsizio Isle, Centre.....	33	6.0	139 49.4	Calebra, Entrance.....	10	34.3	85 40.0
Vries Isle, North Head.....	34	47.3	139 21.0	Salinas River, Salinas Isle.....	11	2.8	85 40.75
Tabusima, East extremity.....	39	11.9	139 33.4	Realejo, Cardon Isle.....	12	27.9	87 9.5
Awassima, N.E. extremity.....	38	29.6	139 15.3	Acapulco, Fort St. Diego.....	16	50.8	99 52.0
Sado Isle, Yasaki.....	38	19.9	138 26.2	Manzanilla Bay, South side....	19	3.5	104 16
Yutsi-sima.....	37	50.5	138 54.2	San Blas, Arsenal.....	21	52.5	105 15.5
Cape Louisa.....	34	40	131 35.2	Mazatlan, Custom House.....	23	11.8	106 23.7
Seto Uchi, Tomo, S. Pier.....	34	22.6	133 22.7	Gnaysmas, Morro.....	27	54	110 50
" Osaki, Tree Isle, S. Pt.	34	7.7	135 7.8	San Jose Mission.....	23	3.5	109 41
Tsusima, Obs. Islet.....	34	18.9	129 12.5	Cape St. Lucas.....	22	52	109 53
Chosan Harbour, Obs. Spot.....	35	6.1	129 2.4	Magdalena Bay, Entrada Point.	24	32.3	112 3.0
Port Lazarof, Obs. Point.....	39	19.2	127 32.0	Port St. Bartholomew.....	27	39.8	114 53.5
St. Vladimir Bay, Low Point..	43	53.7	135 27.3	St. Quintin, West Point.....	30	21.5	115 58.5
Kuril Islands, Kunashir, Peak..	44	31.0	145 46.0	St. Diego, Point Loma.....	32	38.8	117 14.75
" Iturup, Cape Okebets.....	45	38.5	149 14.0	Point Concepcion*.....	34	31	120 30
" Urup, Cape Kastrikum.....	46	16.0	150 22.0	Monterey, Fort.....	36	36.4	121 53.0
" Simusir, Prevost Peak.....	47	2.8	151 52.8	Point Pinos*.....	36	38.5	121 55
Risiri, Pic de Langle.....	45	11.0	141 12.3	St. Francisco, Yerba Buena Cove	37	38.5	122 24.0
Refusiri, Cape Hieber.....	45	27.8	141 0.0	" Fort, South side, Entrance	37	48.5	122 28.5
Cape Notoro.....	45	54.3	142 1.0	Cape Mendocino.....	40	29	124 32
Cape Noasysh.....	45	25.8	141 33.5	Cape Flattery, Tatouch Isle*..	48	23.2	124 45.2
Barracouta Harbour, Tullo Isle.	49	1.8	140 19.0	New Dungeness,* N. end of Spit	48	11.0	123 6.1
Castries Bay, Quoin Point.....	51	28.0	140 49.5	Blunt Isle,* highest part.....	48	19	122 51.5
Jonquiere Bay.....	50	54.0	142 7.0	Admiralty Inlet,* Whedbey Isle.	48	9.3	122 39.5
Saghalin Isle, Cape Aniva.....	46	2	143 30	Vancouver I., Gt. Race Rock*..	48	17.7	123 32.2
Cape Tanapiva, or Patience....	48	52	144 46.3	Esquimalt Head, Duntze Head..	48	25.8	123 26.7
Cape Elizabeth, North extremity	54	24.5	142 46.5	Victoria, Laurel Point.....	48	27.4	123 23.0
Robben Isle, N.E. edge of Reef.	48	36.0	144 33.0	New Westminster, Barracks.....	49	13.0	122 54.4
" S.W. edge of Reef.....	48	28.0	144 10.0	Nootka Sound, Friendly Cove..	49	35.5	126 37.5
Great Shantar Isle, North Point	54	24.5	142 46.5	Queen Charlotte Islands, S. Pt..	55	55	131 2
				Port Stewart, S'most Isle.....	55	38.3	131 47
				Port Protection, Port Baker...	56	20.5	133 36

XV. SOUTH PACIFIC.		Lat. S.	Long. E.	SOUTH PACIFIC.		Lat. S.	Long. E.
Australia, Sydney, Ft. M ^c Quarrie		33 51.7	151 14.0	Rockingham Bay, Gould Isle ...		18 9.9	146 11.5
Paramatta Observatory, S.M.		33 48.7	151 1' 0"	Halifax Bay, Bay Rock		19 7.2	146 44.7
Sow and Pigs, * N.W. edge ...		33 50	151 17	Cape Upstart, N.W. Point		19 42.8	147 47
Port Jackson *		33 51.2	151 18.25	Cumberland Isles, S.E. Isle (K. 1)		21 7	149 58
Botany Bay, N. Pt. of Entrance.		34 0	151 16	Port Bowen, Entrance Isle		22 29.0	150 48.5
Jervis Bay, N. Pt. of Entrance.		35 6	150 53	Port Curtis, Facing Isle		23 50	151 24
Twofold Bay, Red Point*		37 6.2	149 58.2	Cape Moreton, N. Point of Island		27 3	153 26
Cape Howe, Islet off		37 31	150 0	Shoal Bay, Entrance		29 26	153 24
Corner Inlet, S. Pt. of Entrance.		38 47	146 30	Port Macquarrie, Entrance		31 25	152 57
Cape Wilson		39 8	146 23	Port Stephens, Barroinee Head ..		32 40.7	152 4.25
Kent Isles, S.E. Isle *		39 30	147 19	Port Hunter, Court House		32 55.8	151 48.75
Glennie Isles, South Point		39 12	146 15	Tasmania, Hobarton, Mulgrave		42 53.5	147 21.5
Cape Liptrap, Point		38 55	145 57	Port Arthur, Semaphore		43 9.1	147 50.7
Williamstown, Jetty		37 51.2	144 54.75	Cape Pillar, Tasman's Isle		43 12	148 0
Grant Isle, West Point		38 31.6	145 11	Schouten Isle, South Islet		42 21	148 18
Cape Schank		38 30	144 57	St. Patrick's Head		41 34	148 18
Western Port, Phillip I., N.E. Pt.		38 26.7	145 18.25	Swan Island, East Point*		40 44	148 9
Point Gellibrand *		37 52.7	144 55.75	Furneaux Islands, Clarke I., S. Pt.		40 35	148 10
Melbourne, Bateman's Hill ...		37 48.6	144 57.75	Port Dalrymple, Low Head* ..		41 3.4	146 48.25
Shortland Bluff *		38 16.5	144 43.2	" George Town, Flag-staff ..		41 6.3	146 50.25
Port Phillip, Port Nepean		38 18.5	144 42.75	Table Cape		40 56	145 42
Cape Otway *		38 51	143 33	Circular Head		40 43	145 17
King Isle, Harbinger Rocks		39 34	143 52	Three Hummock Isle, S.W. side ..		40 26.5	144 51.0
" S. Point, Cape Stokes		40 10	143 50	Albatross Isle		40 22	144 39
Cape Nelson, South Point		38 26	141 32	Cape Grim		40 40	144 42
Cape Bridgewater		38 22	141 32	West Point		40 57	144 35
Cape Northumberland, Pointed		38 3	140 37	Macquarrie Harbour, Entr. Isle		42 11.6	145 14
Rocks				Point Hibbs		42 39	145 17
Murray River, Mouth		35 31	138 58	Rocky Point		43 1	145 30
Kangaroo Isle, North Point		35 36	137 44	Port Davey, Pyramid Rock, Entr.		43 21	145 56
" Mount Torrens		35 50	136 38	Mantsuyker Is., S.W. Needle Rk.		43 41	146 11
" Cape Bedout, W. extrem.		35 57	136 37	Bruni Isle, Tasman's Head		43 32	147 21
Cape Willoughby *		35 51	138 12	S.W. Pt., C. Bruni		43 28.7	147 8
Cape Jervis		35 38	138 9	N. Zealand, Auckland, Depot Pt.		36°50'5"	174°49'10"
Glenelg, Flag-staff		34 58.8	138 32.75	Kawan I. Bon Accord, Momona Jr.		36 26.0	174 50.25
Mount Lofty, 2,200 feet		34 58.5	138 43.75	Great Barrier Isle, Needles Point		36 1.25	175 26.5
Adelaide, Town		34 55	138 36	Wangari Harbour, Lort Point ..		35 51.15	174 32.17
Port Adelaide *		34 48	138 28	Tutukaka Harbour, North Head ..		35 37.9	174 34.3
Cape Spencer, S. most Point		35 18	136 55	Wangaruru Harbour, Grove Pt. ..		35 23.8	174 22.3
Corney Point		34 52	137 3	Bay of Islands, Motu Mea Isle ..		35 17.0	174 7.03
Port Lincoln		34 43	135 53	Wangaroa Harbour, Peach Isle ..		35 1.7	173 46.7
K. George's S., New Gov. Build.		35 2.2	117 53.75	Manganui, White's Point		35 0.3	173 33.6
Point d'Entrecasteaux		34 52	116 1	Cape Karakara, extremity		34 47.3	173 25.3
Cape Leeuwin, Rocks 2 leagues out		34 21	115 6	Parenga-renga Harbour, Coal Pt.		34 31.0	173 1.8
Swan R., Fremantle, Scott's Jet.		32 3.3	115 45.5	North Cape (Cape Otou), Islet ..		34 25.1	173 4.5
Perth, Government House		31 57.4	115 52.75	Cape Maria Von Diemen, Islet ..		34 28.3	172 38.7
Garden Isle, N.W. Point		32 8.9	115 40.5	Herekino, South Point		35 18.2	173 11.1
Rottemen Isle *		32 0.3	115 31.25	Hokianga River, Flag-staff		35 32.1	173 22.9
Champion Bay, Moore Point		28 47.1	114 36.25	Kaipara Harbour, N. Entr. Head ..		36 24.3	174 7.0
Wizard Peak, 640 feet		28 29.7	114 47.0	Manukau Harbour, Flag-staff ..		37 3.0	174 32.2
Mount Fairfax, 582 feet		28 45.4	114 41.7	Waikato River, Maratai Village ..		37 24.3	174 47.3
Dirk Hartog's Isle, North Point ..		25 31	112 54	Whangaroa Harb., S. Entr. Point ..		37 46.4	174 53.2
Shark's Bay, Cape Lesneur		25 44	113 26	Ka Whia Harbour, South Head ..		38 4.8	174 49.0
N.W. Cape, North Point		21 48	114 3	Albatross Point, North extremity		38 6.2	174 43.5
Exmouth Gulf, Bay of Rest		22 17	114 0	New Plymouth, Flag-staff		39 3.6	174 4.9
Depuch Isle		20 38.4	117 41.0	Mount Egmont, 8,270 feet		39 18.0	174 4.9
Cape Leveque, Islet off		16 23	113 1	Manawatu River, N. Entr. Point ..		40 27.2	175 14.7
King's Sound, Point Torment ..		17 5.5	123 41.75	Farewell Spit, Bush End, extr. ..		40 33.3	173 2.0
" Fitzroy R. Mo., Escape Pt. ..		17 24.4	123 39.75	Cape Farewell, extremity		40 20.8	172 42.2
" Pt. Cunningham, N.W. part ..		16 41.5	123 14.25	Cape Foulwind, 3 steeples, N. one		41 43.3	171 35.3
Cape Londonderry (rocks 3 m. off)		13 44	126 57	Bold Head, extremity		42 57.0	170 42.3
Victoria R., Pt. Pearce, S.W. extr.		14 25.1	129 20.7	Mount Cook, 13,200 feet		43 36.5	170 12.2
Paterson's Bay, Quail Isle		12 30.9	130 28.5	George Sd., Anchor, Cove, N. side		44 55.3	167 26.8
Port Essington, Govt. House		11 22.3	132 10.75	Thompson Sound, Deas Cove, Head		45 11.7	166 58.2
Wessel Isles, N. Pt., Cape Wessel		10 59	136 45	Breaksea Isle, N.E. Point		45 34.7	166 38.7
Groote Eylandt, S.E. Point		14 16	136 58	Milford Sound, Freshwater Basin		44 35.0	167 47.2
Wellesley Isles, North extremity		16 18	139 40	Five-fingers' Pt., W. of Dusky Bay		45 44.3	166 27.7
Cape York, Rocky Islet		10 41.6	142 34	West Cape, extremity		45 54.3	166 26.5
Booby Isle, Post-office		10 36.7	141 54.0	Chalky Inlet, N. Port, Little I. ..		45 59.0	166 34.7
Raine Isle, Beacon		11 36	144 4.25	Stewart Isle, Black Rock Point ..		46 41.5	167 53.7
Sir Charles Hardy's Isles, N. Isle		11 54.7	143 30.75	" S.W. Cape		47 17.0	167 30.3
C. Weymouth, Restoration Isle, }		12 37.5	143 27.5	Pt. Pegasus, Cove abrst. Anchor, I.		47 11.7	167 41.8
West Point				Paterson's Inlet, Glory Cove		46 58.5	168 10.8
Lizard Isle, Summit, 1,200 feet		14 41.4	145 28.5	Snarres, S.W. Isle		48 6.7	166 28.3

XVI. SOUTH PACIFIC—cont.		Lat. S.	Long. E.	SOUTH PACIFIC.		Lat. S.	Long. E.
Pt. Adventure, White Beach, S. end		47° 3' 9"	168° 11' 9"	North Britain, South Cape, Islet		6° 30'	149° 48'
Nuggett Pt., extremity of Rocks.		46° 27' 3"	169° 51' 5"	Rossel Isle, N.E. Point.....		11° 22'	154° 26'
Taeri Isle, East Point.....		46° 3' 7"	170° 14' 3"	Admiralty Isle, N'most Islet...		1° 54'	146° 49'
Otago, Tairua Head.....		45° 46' 9"	170° 44' 9"	New Guinea, Riche Isle, N. Pt.		8° 2'	147° 55'
Koputai Bay, South Point...		45° 49' 3"	170° 39' 2"	C. K. William, high land to w'ward		6° 11'	147° 43'
Waitangi River, Entr. N. Head		44° 55' 0"	171° 12' 1"	Dampier Isle.....		4° 40'	145° 56'
Timaru, Flag-staff, Landing-pl.		44° 23' 0"	171° 17' 3"	D'Urville I., Peak near W. end.		3° 19' 8"	143° 29' 3"
Akaroa Harbour, Obs. Head....		43° 49' 6"	172° 58' 3"	Cape Ambarnoh (Pt. D'Urville).		1° 26'	137° 45'
Lyttleton, Custom House.....		43° 36' 7"	172° 44' 28"	Mysory Isle, East Point.....		1° 4'	136° 11'
Kaikora Peninsula, East Point..		42° 26' 5"	173° 48' 8"	Jobie Isle, East Point.....		1° 48'	136° 48'
Cape Campbell, extremity.....		41° 43' 3"	174° 18' 5"	Port Dorei, East Pt., near Head.		0° 51' 5"	133° 58' 1"
Cape Jackson.....		40° 59' 8"	174° 20' 0"	Mispalu Isles, S.E. Point.....		0° 19'	132° 7' 1"
Pelorus Sound, Ohingaroa Bay..		41° 14' 4"	173° 51' 6"	Waigeo, S.E. Point.....		0° 21'	131° 16' 1"
D'Urville Isle, Port Hardy.....		40° 46' 6"	173° 55' 0"	Boni Isle, North Point.....		0° 1' 4"	131° 3'
Current Basin, Cross Point....		40° 56' 3"	173° 52' 3"	Pigeon Isle.....		0° 39' 4"	130° 32' 25"
Nelson, Magazine on Boulder Bk.		41° 15' 6"	173° 17' 0"	Amsterdam and Middleburgh.)		0° 19' 9"	132° 7' 1"
Astrolabe Road, Adele I., N.E. Pt.		40° 58' 9"	173° 5' 25"	S.E. extremity.....			
Massiere Bay, Tasman Corner..		40° 31' 8"	172° 45' 2"	McCluer's Inlet, East Head....		2° 26'	133° 58'
Porirua Harb., Mana I., N.W. Pt.		41° 5'	174° 48'	Triton Bay, Fort Dubus.....		3° 47'	134° 2'
Wellington, Head, 2,190 feet.		41° 11' 3"	174° 23' 0"	C. Valsche, W. Pt. of Fred. Hen. I.		8° 22'	137° 38'
Cape Palliser ('Kawa Kawa)...		41° 37' 8"	175° 17' 0"	Cape Possession.....		8° 32' 2"	146° 25'
Flat Point.....		41° 10' 8"	176° 1' 5"	Cape Rodney, Point.....		10° 10'	148° 28'
Cape Turnagain (Teporo), E. extr.		40° 22' 0"	176° 45' 3"	Great Kei Isle, North Point....		5° 15'	133° 6'
Cape Kidnappers (Matauaumau).		39° 38' 0"	177° 7' 7"	Aroe Isle, Dobbo Harbour, Point		5° 45' 4"	134° 17'
Ahuriri Harbour, Maori Pah...		39° 28' 7"	176° 55' 2"	Timor Laut, W. Limit, Woody I.		8° 21'	130° 40'
Portland Isle (Tehoura), S. extr.		39° 17' 7"	177° 53' 1"	Ceram, Wahaay Harbour Fort..		2° 45' 2"	129° 28'
Poverty (Turanga) Bay, S. Point		38° 45' 0"	177° 59' 4"	Boeroe, Cajeli Bay, Fort Defence		3° 22' 3"	127° 14' 25"
Tolaga Bay, Motu-Heka Isle...		38° 20' 8"	178° 21' 2"	Amboyna, City, Fort Victoria..		3° 41' 5"	128° 8' 1"
East Cape (Wai-Apu) Islet....		37° 40' 0"	178° 36' 1"	Xullo Talyabo, Haycock Isle...		1° 47'	124° 22'
Cape Runaway (Tewaka).....		37° 30' 7"	178° 0' 5"	Obi Major, S.E. Point.....		1° 27'	127° 54'
Tauranga, Mount Mongonui...		37° 36' 4"	176° 11' 2"	Mysol, West Point.....		1° 57'	129° 39'
Cape Colville, North Point....		36° 28' 3"	175° 22' 0"	Batjan, Fort Barneveldt.....		0° 37'	127° 34'
Auckland Isles, South Cape....		50° 51'	166° 7'	Celebes, Peling Isle, S.E. Point.		1° 50'	123° 13'
West extreme.....		50° 50'	165° 55'	Boeton Isle, Bolio Town, Fort..		5° 28'	122° 33'
Campbell Isle, E. side, S. Harb.		52° 34' 4"	169° 12' 75"	Macassar, Fort, N. Bastion....		5° 7' 9"	119° 21' 1"
Macquarrie Isle, North Point...		54° 19'	158° 56'	Timor, Keopang, Fort Concordia		10° 9' 6"	123° 33' 8"
Bounty Isle.....		47° 44'	170° 7'	Dilly, Town, Flag-staff.....		8° 33'	125° 32' 1"
Antipodes Isle.....		47° 32'	179° 42'	Flores, Head, Iron Cape.....		8° 1'	122° 48'
Chatham Isle, Port Waitangi...		43° 57'	176° 44' w	Wetter, Dog Isle, N.W. Point..		7° 41'	125° 54'
Kermadec Isle, Sunday Isle....		29° 15'	177° 56' w	Lomblem, East Point.....		8° 14'	123° 33'
Norfolk Island, Sydney B., Fl.-st.		29° 8' 7"	167° 57' 25"	Pantur, N.E. Point.....		8° 10'	124° 18'
Lord Howe Island.....		31° 37'	159° 14'	Ombay, Islet off S.W. Point....		8° 30'	124° 15'
Middleton Reef.....		29° 28'	159° 4'	Sumba, or Sandalwood, W. Pt..		9° 42'	118° 58'
Feejees, Vanua Levou, E. Point		16° 8'	179° 55'	Sumbawa, S.W. Point.....		9° 2'	116° 43'
Ovalau, Levuka, Mission, School		17° 40' 7"	178° 49' 0"	Lombok, Pk. N.E. part, 11,400 ft.		8° 26'	116° 23'
Viti Levou, Rewa Rds., Nukulau I.		18° 10'	178° 31' 0"	Bali, Peak on E. part, 11,319 ft.		8° 21'	115° 25'
New Caledonia, East Point....		22° 16'	166° 55'	Madura, N.W. or Klampus Point		6° 54'	112° 43'
West extremity, Point Tonnerre.		20° 24'	164° 0'	Sourabaya, Kalemaas Fort, Fl.-st.		7° 14' 5"	112° 42' 7"
Balade Harbour, Isle.....		20° 17' 2"	164° 25' 0"	Samarang, Flag-staff.....		6° 57' 3"	110° 25'
Britannia Isle (Mare), E. Point		21° 26'	168° 10'	Batavia, Observatory, S.M....		6° 7' 7"	106° 48' 6"
Chabrol Isle (Lifu), East Point.		21° 5'	167° 26'	Bantam, Flag-staff.....		6° 1' 7"	106° 8' 7"
New Hebrides, Tanna Isle, Port		19° 30' 9"	169° 28' 7"	Anjer (Light * S.W'ward), Fl.-st.		6° 3' 2"	105° 55'
Resolution, Cook's Pyramid.)				Java Head.....		6° 47'	105° 11'
Erromango Isle, Traitor's Head.		18° 46'	169° 15'	Krakatoa Peak.....		6° 9'	105° 27'
Sandwich Isle (Vati), S.E. Point		17° 52'	168° 35'	Bencoolen, Fort Marlborough..		3° 47' 3"	102° 17'
Mullicollo, Port Sandwich.....		16° 25'	167° 46'	N. Pageh I., vis. 15 leag. N. Pt.		2° 32'	100° 4'
St. Bartholomew, Islet, S.E. Pt.		15° 44'	167° 20'	Banca, South extrem. (Rock off)		3° 8'	106° 29'
Espirito Santo, S.W. Pt., Cape)		15° 40'	166° 44'	Billiton, South Point.....		3° 15'	107° 29'
Lisburne.....				Borneo, South extr. C. Salatan		4° 10'	114° 40'
N. Point, C. Cumberland		14° 43'	166° 40'	Kumpal, S.W. Point *.....		2° 44' 2"	110° 7'
Banks Isle East, or Sugarloaf...		13° 53'	168° 45'	Keeling Isle.....		11° 50'	96° 51'
La Perouse (Varikoro), Summit.		11° 37'	166° 49'	Lat. S. Long. W.			
Sta. Cruz Isle (Nitendi), E. Point		10° 41'	166° 10'	Friendly Is., Lafouka, Miss. Stat.		19° 48' 2"	174° 20'
Salomons Isle, Rennel I., S.E. Pt.		11° 38'	160° 41'	Tongatabou, N. side, Niukalofa.		21° 8' 0"	175° 14' 7"
San Christoval (Arossi), E. Point		10° 51'	162° 24'	Vavao, West Point.....		18° 39' 0"	174° 1' 0"
Malayta, N.W. Point.....		8° 22'	160° 37'	Navigators, Upolu, Apiahad...		13° 48' 9"	171° 41' 2"
Guadalcanar, East Point.....		9° 50'	160° 54'	Cook's Is., Rarotonga, N.W. Pt..		21° 11' 6"	159° 47'
Yebel, South Point, Cape Prieto.		8° 34'	159° 54'	Bass Islands, or Four Crowns...		27° 40'	143° 30'
Choiseul, E. Point, Cape Labbee.		7° 29'	157° 55'	Society Is., Tahiti, Pt. Venus.)		17° 29' 2"	149° 29' 0"
N.W. Point, C. Alexander		6° 42'	156° 32'	Flag-staff.....			
Bougainville, North Point....		5° 30'	155° 7'	Papeete Harbour, Flag-staff		17° 32' 1"	149° 34' 0"
New Ireland, Port Carteret.)		4° 42'	152° 44' 5"	Bora Isle, Oteavamea, House...		16° 31' 6"	151° 46' 0"
Cocos Isle, N.E. Point.....				Marquesas, Nukahiva, St. Anne B.		8° 55' 3"	140° 6' 0"
Port Praslin, S.E. Corner.		4° 49' 8"	152° 54' 7"	Gambier's, Manga, Mount Duff.		23° 8' 0"	134° 55' 0"

XVII. N. AMERICA.		Lat. N.	Long. W.	N. AMERICA.		Lat. N.	Long. W.
Newfoundland, St. John's, S.)		47 33.6	52 43.0	Portland, City Hall		43 39.2	70 15.2
Head, Fort Townshend				" West Entrance		43 39	70 17
Cape Spear *		47 30	52 39	Cape Elizabeth **		43 33.6	70 11.5
Cape Race		46 40	53 7	Saco Harbour, Wood Isle *		43 27	70 19
Cape Pine *		46 37	53 36	C. Porpoise, Goat I.* S.W. Point		43 21	70 25
Cape St. Mary		46 50	54 15	Bald Head		43 13	70 34.5
St. Pierre Isle, S.E. Point *		46 45	56 12	Boon Isle *		43 8	70 29
S.W. extremity Cape Ray		47 37	59 18	Whale's Back *		43 3	70 41
St. Paul Isle, North Point *		47 14.0	60 9.0	Portsmouth, Fort Constitution ..		43 3.5	70 43
Magdalen Isles, Bird Isles, E. one		47 51.0	61 9.75	Isle of Shoals, South Isle *		42 58	70 37
" Bryon or Cross I., E. Pt.		47 48.0	61 25.25	Newbury Port **		42 48.5	70 49.0
" East Isle, E. extremity ..		47 37.7	61 24.5	Ipswich Bay **		42 41	70 47
Mingan Isle, Clearwater Point, S.W. extremity		50 12.6	63 27.7	Annis Squam. Harbour *		42 39.8	70 41
River St. John (Labrador), Entr. East Point		50 17.2	64 21.0	Cape Ann, on Thatcher Isle * ..		42 37	70 40
Seven Isles Bay, Store		50 13.1	66 24.75	Cape Ann Harb., Ten-pound I.* ..		42 37	70 40
Point Monts, South Light *		49 19.7	67 22	Salem, City Hall		42 31.5	70 54.0
Quebec, N.E. Bastion		46 49.1	71 13.75	Baker's Isle **		42 32.2	70 47.5
Wolfe and Montcalm's Monument		46 48.6	71 13.5	Marble Head *		49 30.0	70 51
Green Isle *		48 3.4	69 26.0	Boston, State House		42 24.4	71 4.25
Cape Chatte. extremity		49 6.0	66 46.0	" Harb., N.side, Main Outer Entr.		42 19.7	70 53.75
Cape Magdalen (River E-d)		49 15.6	65 22.0	Scituate *		42 12.3	70 43.25
Cape Gaspé, Flower-pot, Rock off		48 45.2	64 10	Plymouth, Gurnet **		42 0.2	70 36.25
Anticosti Isle, E. or Heath Point *		49 5.4	61 45.2	Barnstable *		41 43.2	70 16.5
S.W. Point *		49 23.8	63 36.0	Billingsgate Isle *		41 51.6	70 4.5
Ellis Bay, W. Entrance		49 47.8	64 23.5	Race Point *		42 3.7	70 15.0
Bonaventura Isle		48 29	64 10	Cape Cod, Higher Truro *		42 2.4	70 4.0
Chaleur Bay, Carlsle		48 1	65 16	Long Point, Cape Cod Harbour *		42 2.1	70 10.5
" Dalhousie Isle		48 4.4	66 22.25	Nauset ***		41 51.6	69 57.25
Miscou Isle, N.E. Point, Pt. Birch		48 1	64 31	Chatham Harbour **		41 40.3	69 57.25
Port Escumenac *		47 5	64 46	Monomy Point *		41 33.6	70 0.0
Prince Edward Isle., N. Cape ..		47 4	64 1	Point Gammon *		41 36.6	70 16.25
Richmond Bay, Royalty Point ...		46 34.0	63 43.0	Nantucket Isle, Sandy Point * ..		41 23	70 3
" East Point		46 27	61 58	" Brant Point, Town *		41 17.5	70 5.25
Charlotte, Fort George, Flag-staff		46 14.0	63 7.0	Martha's Vineyard, N.E. Point * ..		41 25.2	70 27.5
Cape Breton, Cape North		47 3	60 25	" Holmes Harbour, West Chop * ..		41 28.8	70 36.25
Sydney Harbour, East side, * Entr.		46 16	60 8	" West Point, Gay Head *		41 20.9	70 50.5
Scatarly Isle, N.E. Point *		46 2	59 41	" Cuttchank, * S.W. Point.		41 25	70 57
Pictou Harbour **		45 41.5	62 40.25	Seaconnet Point		41 26.5	71 13.5
Gut of Canso, N.W. Entr. *		45 41.8	61 29.5	Bristol Episcopal Chapel		41 40	71 17.2
Cranberry Isle * Bass Rk., 2 m. E.)		45 20.0	60 56.0	Providence, College		41 49.6	71 24.7
Halifax, Dockyard, Tablet, S.M. ..		44 39.7	63 35' 30"	Newport, Court House		41 29.5	71 19.2
Sumbro Isle *		43 26.3	63 33	Beaver-tail Point, or Rhode Isle *		41 26	71 24.5
Malaguash Harbour, Cross Isle **		44 20	64 7	Port Judith *		41 23	71 30
Coffin Isle *		44 3	64 36	Stonington, Town, South Point * ..		41 19	71 54.5
Shelburne, M'Nutt's I., S.E. Pt. **		43 37.5	65 16	New London, * West Entrance ...		41 18.9	72 5.7
C. Sable, S.E. Pt. of Islet (advanc.)		43 24	65 36	Goose Island *		41 13	72 42
Cape Fourchu *		43 47	66 10	New Haven, Five-mile Point * ..		41 14.5	72 54.5
Bryer's Isle *		44 16	66 22	Norwalk Isle *		41 2.8	73 25.5
Annapolis, Pt. Prim, S. side Entr. *		44 41	65 45	Block Isle, North Point ***		41 13.4	71 35
Black Rock, Point *		45 10.8	64 48	Long Isle, East or Montauk Point *		41 4.2	71 52.0
Cape Enrage *		45 36	64 29	New York, City Hall		40 42.7	74 0.75
Quaco *		45 23	65 20	Fort Tomkins *		40 36	74 3.5
St. John's, Partridge Isle		45 14.1	66 3.5	Prince's Bay		40 30.4	74 13.25
Cape Lepreau **		45 3.7	66 27	Sandy Hook ***		40 27.6	74 0.7
St. Andrew's, South Point *		45 4.3	67 3	Nevisink **		40 23.7	73 59.5
Passamaquoddy B., Campo, * N.Pt.		44 57	66 55	Barnegat Inlet *		39 45.9	74 7.0
Quoddy Head *		44 48	66 57	Little Egg Harb., Tacker's I., N.Pt.		39 30.8	74 17.5
Grand Manan, N.E. Point		44 46	66 43	Cape May *		38 55.8	74 58.5
Gannet Rock *		44 30	66 46	Brandy-wine Shoal **		38 59	75 8
Machias Seal Isle *		44 29	67 5	Egg Island *		39 10.4	75 9
Petit Manan, South Point *		44 22	67 52	Cohansey Creek *		39 25	75 17
Baker's Isle *		44 13.5	68 8	Philadelphia, State House		39 57	75 9.5
Castine *		44 17	68 45	Reed Isle, * Bell		39 30	75 35
Owl's Head Bay, * N.E. Point		44 4	68 45	Bombay Hook *		39 21.7	75 31
Mount Desert Rock, * Bell		43 58	68 8	Salem, City, Church		39 34.5	75 36.0
I. Haute (Saddleback to Eastward)		43 59	68 36	Mahon's Ditch *		39 10	75 25
Matinicus Isle, South Rock *** ..		43 46.5	68 49	Cape Henlopen *		38 46.6	75 6.0
White Head *		43 57	68 4	" Beacon, * Small		38 47.4	75 5.5
Manhegan Isle *		43 44	69 18	" Beacon, * W. end Breakwater		38 47.5	75 6.7
Penmaquid Point *		43 48	69 29	Assentague Isle, South end * ...		37 59	75 25
Townshend Harbour *		43 48	69 36	Smith's Isle, East Point *		37 13	75 52
Seguin Isle, * Bell		43 41.6	69 44	Sand Spit *		37 45	76 4
				Cape Charles		37 3	76 2
				Baltimore, Battle Monument ...		39 17.4	76 37.5

XVIII. N. AMERICA—cont.		Lat. N.	Long. W.	N. AMERICA.		Lat. N.	Long. W.
Washington, Capitol	30 53.4	77 2.0		Alacranes, Port, Perez Isle, Huts.	22 23.6	89 42	
Point Look-out	38 1	76 27		Mageras Isle, Stone Turret	21 12.7	86 40.5	
New Point Comfort	37 18	76 21		Ambergris Isle, East Point	18 6	87 50	
Back-river Point	37 5	76 21		Light-house Reef,* S.E. Pt. Half-moon Cay	17 12	87 33	
Cape Henry	36 56	76 4		Turneffe Rfa.,*** N. Pt. Maugor Cay	17 36	87 46	
Pimlico Sound, New Inlet	35 37	75 27		Bellise, Fort St. George	17 29.3	88 12	
Cape Hatteras	35 15	75 30		Truxillo, Fort	15 55.7	85 59.5	
Ocracoke Inlet, North side	35 6.5	75 58		Utile Isle, N.E. Peak	16 7.5	86 52.7	
Cape Look-out	34 36	76 36		Port Royal, George Cay, N.W. Pt.	16 24.3	86 19.2	
New Inlet, Federal Point	33 56	77 55		Caratawa Lagoon, East Point	15 23.7	83 43	
Cape Fear	33 48	77 57		St. Andrew's Isle, S.W. Cove	12 31.7	81 44	
Bald-head Isle	33 51	78 0		Blewfields	11 59.3	83 41.5	
North Isle, South Point	33 13	79 10		Great Corn Isle, S.W. Point	12 9.2	82 59.7	
George Town	33 22	79 18		San Juan de Macaragua	10 55	83 43	
Cape Roman	31 1	79 24		Jamaica, E. Point or Pt. Morant	17 55.7	76 11	
Charleston, Fort Pinckney	32 46.4	79 55		Port Antonio, Fort	18 11.3	76 27	
Charleston Light	32 42.2	79 52.7		St. Ann's Bay, Long Wharf	18 26.4	77 13	
Beaufort Arsenal	32 26	80 41		Falmouth Harbour, Fort	18 30.6	77 40	
Port Royal, Entrance	32 7	80 34		Montego Bay, Fort	18 29.4	77 56	
Savannah, South Entrance	32 0	80 52		North Negril, North Point	18 23	78 22	
„ Town, Exchange	32 4.9	81 7		Old Harbour, Careening Isle	17 53.5	77 6	
Doboy Sound	31 27	81 24		Port Royal, Fort Charles	17 56	76 51	
Danen, Town	31 25.4	81 33		Pedro Bank, N.W. edge	17 36	78 52	
St. Simon's Isle, on South Point	31 8	81 36		Great Cayman Isle, Fort George	19 17.7	81 23.5	
Cumberland Isle, North Point	30 56	81 34		St. Domingo, City, Consulate	18 28.2	69 52	
Amelia Isle, North Point	30 42	81 36		Port au Prince, Fort Isle	18 33.7	72 21	
St. John's River, South Entrance	30 20	81 33		Gonaive Isle, West Point	18 55.4	73 18.25	
St. Augustine Harbour, Fort	29 54	81 26		Gonaives, Port Verreux	19 25.7	72 42.5	
Anastasia Isle, North Point	29 52	81 25		St. Nicholas' Mole, Ft. St. George	19 49.5	73 22.2	
Cape Canaveral	28 28	80 33		C. Haytien Harb., Turret d'Estaing	19 46.7	72 11.75	
C. Florida,* S. Pt. of Biscayne B.	25 41	80 10		Samana, Town, Fort	19 12.5	69 19.25	
Carysfort Reef	25 13	80 11		Banistre Caya, N.E. one	19 10.4	69 15.75	
Sand Cay	24 27	81 52		Cuba, Santiago,* Morro	19 53.9	75 55.5	
Cay West, West Point	24 32	84 48.5		Cape de Cruz	19 50.4	77 45	
„ Floating Light	24 38	81 53		Jagua Bay	22 1	80 30	
Tortugas, West Point, Bush Cay	24 37.4	82 52.5		Isla de Pinos, S.W. Point	21 24	83 7	
Cape Sable, Fort	25 6	81 9		West extremity Cape St. Antonio	21 51.5	84 57.2	
Cape Romano	25 51	81 56		Havannah,* Morro, S.M.	23 9.4	82.21.57	
Tampa Bay, Egmont Cay,* at Entrance North Point	27 36.1	82 45.25		Piedras Cay (Light destroyed)	23 14.7	81 8.0	
Dog Island	29 46.3	84 38.2		Port Icaos* (Light to S. Eastward)	23 11	81 9	
St. George Isle	29 37.4	85 5.25		Pan de Matanzas, 1,277 feet	23 1.9	81 45	
Pensacola Bay, Entrance	30 20.8	87 17		Cay Sal, North Point	23 41.7	80 25.0	
„ Naval Yard, Store	30 20.5	87 15.25		Cay Sal, Elbow Cay	23 56.5	80 26.5	
Mobile, East Entrance	30 13.6	88 0.75		Port Maternillas	21 40	77 8	
„ Sand Isle	30 11	88 2		Barracoa, Fort	20 21.6	74 29	
„ Chocktaw Pt.,* S. of City	30 40	88 2		East Point, Cape Mayai	20 15	74 7	
Ship Isle, West Point	30 12.6	88 57.2		Cayo Romano, N.W. Point	22 27	78 19	
Cat Isle, West Point	30 13.7	89 5		Bahamas, Turk's Isle, N. extr.	21 23	71 6	
Pass Christian,* on Main	30 18	89 10		„ Hawk's Nest	21 26.3	71 10.5	
Chandeleur Isle,* North Point	30 3	88 50		Great Inagua, N.E. Point	21 21	73 1	
Mississippi R., N.E. Pass, Frank's I.	29 8.5	89 1.5		Caicos Bank, East Harbour	21 31	71 32	
„ South Passage	29 0	89 8		Hogsty Reef, N.W. Cay	21 40.5	73 50.7	
„ S.W. Passage	28 58.5	89 20		Mariguana Isle, Centre Hill	22 23	72 55	
New Orleans, City Hall	29 57.7	90 6.75		Samana, or Attwood's Cay, W. Pt.	23 5.5	73 49	
Timbalier Isle	29 4	90 17		Crooked Isle, Moss Flag-staff	22 7.5	74 20.5	
Point au Fer	29 19.5	91 20		Rum Cay, South Point	23 37	74 50	
Belle Isle (Vermilion B.),* W. end	29 32	92 0		Watlings Isle, South end	23 56.7	74 28	
Bolivar Point	29 22	94 49		Concepcion, West Point	23 50	75 8	
Aransas Pass	27 50	97 2		St. Salvador, East Point	24 8	75 17	
Rio Grande del Norte	25 56	97 12		Stirrup Cays, Ellis Flag-staff	25 49.7	77 55	
Tampico, North Point	22 15.5	97 46		Andros Isle, Mastic Point	25 4	77 57	
Vera Cruz, San Juan de Ulloa	19 11.9	96 8.0		New Providence, Nassau	25 5.6	77 21.25	
Sacrificios Isle	19 16.2	96 5.5		Eleuthera I., N.E. or Palmetto Pt.	25 9	76 9	
Isle Carmen, West end, Port Laguna, Entrance of Terminos Lagoon, Brit. Cons.	18 38.4	91 50.7		Long Isle, South Point	22 51	74 51	
Lerma, Church in Square	19 48.4	90 36.75		Lobos Cay, Beacon	22 22.8	77 35.5	
Campeachy	19 50	90 33		Gun Cay	25 34.5	79 19	
Sisal, Fort	21 10.1	90 2.75		Great Bahama Bank, Gt. Isaac I. k.	26 2	79 5	
Silam, Town	21 23.7	88 54.5		Great Abacou Isle,* near S. Point	25 51.5	77 10.7	
Cape Catoche	21 36	87 6		Bahama Isle, West Point	26 41	79 0	
Arenas Isle, Sandy Isle, N. Point	22 8	91 23		Memory Rock	26 57.5	79 5.25	
Alacranes, North Point	22 35	89 49		Bermuda, Dockyard, Clock	32 19.0	64 52.0	
				„ Light,* 365 feet	32 14.7	64 52.0	

XIX. S. AMERICA.		Lat. N.	Long. W.	S. AMERICA.		Lat. S.	Long. W.
Chagres, San Lorenzo Fort.....	9 19.7	79 59.25		Anhatomerim, Isle, Flag-staff...	27 25.5	48 31.5	
Porto Bello, Fort, San Ieronymo...	9 32.5	79 38.5		Rio Grande de Sul *.....	32 7.5	52 5.2	
Cartagena de las Indias, Dome...	10 25.6	75 34.0		Maldonado, Tower.....	34 54.6	54 55.0	
Santa Maria, Morro.....	11 15	74 16.0		Flores Isle *.....	34 56.9	55 52.3	
Bahia Honda, East Point (Shoal)...	12 19	71 48		Monte Video, Custom House...	34 54.3	56 9.7	
Maracaybo.....	11 2	71 41		Colonia *.....	34 28.0	57 49.0	
Oruba Isle, North Point.....	12 36	70 8		Buenos Ayres, Mole, Landing Pl.	34 35.5	58 19.4	
Curacao I., Ft. Amsterdam, St. Ann	12 6.3	68 54		Cape St. Antonio, North Point...	36 18.5	56 43.4	
Little Curacao *.....	12 2	68 38		Cape Corrientes, E. Summit...	38 5.5	57 26.8	
Buen Ayre Isle, South Point.....	12 2	68 17		Bahia Blanco, Fort Argentine...	38 43.8	62 12.3	
Orchila, West Point, Rock.....	11 50.2	66 14		Union Bay, Indian Head.....	39 57.5	62 4.6	
Tucacas *.....	10 47	68 22		Port Desiré, Ruins.....	47 45.0	65 51.8	
Porto Cabello.....	10 29.4	68 0.0		Port St. Julian, Sholl Point.....	46 15.3	67 39.6	
La Guara.....	10 36.7	66 56.5		Port Santa Cruz.....	50 6.7	68 21.1	
Cumana, Fort Bocca.....	10 27.6	64 11.0		Falklands, Eddystone.....	51 11.30	59 0.9	
Tortuga Isle, West End.....	10 58	65 26.5		West Cay, Jason Isle.....	50 59.8	61 25.1	
Margarita Isle, N. Point Cape Isla	11 10	63 58		Port Egmont, Saunders Isle.....	51 21.0	60 1.6	
Trinidad, East Point, Port Galera	10 50	60 54		Port Stephens, E. Entrance, Pt.	52 12.0	60 38.4	
Port Spain, Fort.....	10 38.7	61 32		Port Louis, Carenage.....	51 32.3	58 4.5	
Tobago, North Point.....	11 25	60 32		East extremity, Cape Pembroke *.	51 40.7	57 40.6	
Grenada, St. George, Fort.....	12 2.9	61 43		Port William, Stanley Harbour, } Government Store.....	51 41.1	57 49.1	
St. Vincent, Kingston.....	13 13	61 13		C. Fairweather, Patagonia, S. Pt.	51 32.1	68 53.9	
Barbados, Bridge Tn., Engin. Whf.	13 4.2	59 37		Port Gallegos, Obs. Mound.....	51 33.3	68 56.7	
St. Lucia, Port Castres *.....	14 0	61 1		Cape Virgins, S.E. Point.....	52 20.2	68 19.1	
Martinique, Fort Royal *.....	14 36	61 4.25		Cape Froward, S. extr. America...	53 53.7	71 15.8	
Caravel Rock.....	14 48.5	60 53		Staten Isle, Cape St. John, E. Cliff	54 42.8	63 41.3	
Dominica, Roseau Town, Flag-st.*	15 18.4	61 24.75		„ Cape St. Anthony.....	54 43.5	64 43.2	
Guadeloupe, Basse Terre, Ft. Trois	16 0.5	61 45.25		Cape Horn.....	55 58.7	67 13.6	
Montserrat, Redondo.....	16 55.5	62 18.75		Orange Bay, W. part Burnt Isle.	55 30.8	68 2.7	
Antigua, English Harb., Dockyard	17 0.0	61 45.7		Townshend Harbour, Obs. Islet...	54 43.3	71 53.1	
St. John's, Fort James.....	17 6.7	61 51.25		Cape Inman, Cliff Summit.....	53 18.5	74 16.9	
Barbuda, River Fort, S.W. side...	17 35.8	61 49.5		Famine Port, Tent.....	53 38.3	70 55.4	
Nevis, Charleston, * S.W. Point...	17 8.8	62 42		Cape Pillar, North Cliff.....	52 42.8	74 40.9	
St. Christopher, St. George's Ch.*	17 18	62 43.0		Harbour of Mercy, Bottle I., Sum.	52 45.0	74 36.8	
Anguilla, Custom House.....	18 13.2	63 4		Port Otway, S. Entrance, Summit	46 49.5	75 16.9	
St. Bartholomew, Fort Oscar.....	17 53	62 51.25		Ypun, or Narborough I., S. Point	44 40.7	74 45.5	
St. Martin, Fort Marigot.....	18 4.1	63 5.5		Port Low, Huacane Isle, S. Point.	43 48.5	74 0.1	
Santa Cruz, Christianstad.....	17 44.5	64 41		Huapilacuy, Point *.....	41 46.7	73 52.7	
Sombrero.....	18 35.8	63 27.75		Port San Carlos, Point Arena...	41 51.3	73 53.0	
Tortola, Fort Burt.....	18 24.1	64 32		Reloncavi Sound, Port Montt....	41 30.5	72 55.0	
St. Thomas, E. Entr. Ft. Christian	18 20.4	64 55.7		Valdivia, Fort Corral.....	39 52.9	73 26.0	
Porto Rico, City *.....	18 29	66 7.25		Santa Maria Isle, Aguada Point...	37 2.8	73 31.0	
Mona Isle, East Point.....	18 5	67 50		Talcahuano, Fort Galvez.....	36 42.0	73 7.0	
Point Barima, * River Orinoco...	8 36	60 23		River Maule, Church Rock.....	35 19.7	72 26.3	
Cape Nassau.....	7 36	58 56		Valparaiso, * Ft. San Antonio, S.M.	33 1.9	71°38' 0"	
George Town *.....	6 49.4	58 11.5		Port Huasco, Outer Rk., Inner Pt.	28 27.3	71 16.0	
Barbice, Floating Light *.....	6 19	57 22		Coquimbo, B., Pajarosninos, N.Rk.	29 55.2	71 22.2	
Corentyn, Nickerie Fort.....	5 57.5	56 52		Port Caldera, Summit of Isle.....	27 3.0	70 53.1	
River Surinam, Paramaribo, Ch.	5 44.3	55 13		Mount Moreno, 4,160 feet.....	23 28.5	70 35.3	
Cayenne, Fort, Flag-staff.....	4 56.5	52 18.6		„ Cobija Bay, Landing Place...	22 34.0	70 18.1	
Cape Orange.....	4 22.4	51 24.9		Iquique, Centre of Island.....	20 12.5	70 11.5	
Cape do Norte.....	1 42.0	49 48.0		Arica, Mole.....	18 28.1	70 20.7	
Macapa, N.E. Bastion.....	0 0.8	50 59.5		Islay, Arequipa, Custom House...	17 0.0	72 7.3	
Para, Custom-House Quay.....	1 26.9	48 27.7		Point Lomas, Flag-staff.....	15 33.2	74 51.7	
Atalaia Point *.....	0 35.0	47 17.0		Pisco Town, Centre.....	13 43.0	78 13.5	
Itacolomi Point, * Morro.....	2 19.2	44 23.6		Chincha Isles, North I., Boat-slip	13 38.8	76 24.5	
Maranhao, San Luis, Sea Battery..	2 31.7	44 15.6		Chilca Port, S.W. Pitch.....	12 31	76 49.7	
Isle St. Anna, *.....	2 19.4	43 30.3		Cape San Lorenzo *.....	12 4.0	77 16.5	
Ceara, Church Tower.....	3 43.0	38 30.0		Callao, Arsenal, Flag-staff.....	12 4.0	77 10.5	
Port Macoripe *.....	3 41	38 47.5		Supé Bay, Head of Bay.....	10 49.7	77 44.0	
Cape St. Roque.....	5 28	35 14.5		Casma Bay, Inner South Point...	9 28.0	78 22.6	
Cape Branco, Extreme.....	7 8.5	34 45.9		Samanco Bay, Cross Point.....	9 15.5	78 39.7	
Pernambuco, Fort Picao *.....	8 8.6	34 49.7		Truxillo Town, Church.....	8 7.5	79 1.0	
Bahia, Cape St. Antonio *.....	12 58.3	38 28.2		Lambayeque Rd., Centre of Beach	6 46.0	79 56.5	
Morro St. Paolo *.....	13 22.6	38 51.2		Payta Point, North extremity...	5 0.8	81 10.0	
Porto Seguro, Entr. to River.....	16 26.8	39 0.8		Santa Clara Isle *.....	3 10.7	80 24.6	
Espiritu Sto. B., Convent da Penha	20 19.2	40 13.7		Puna Isle, Church Cross.....	2 14.1	79 53.2	
Cape St. Thomé (banks 15 m. off)	22 2.0	40 56.0		Guyaquil, Arsenal.....	2 12.4	79 51.4	
Cape Frio, South Point *.....	23 0.7	41 57.1		C. San Lorenzo, Marlingapike Rk.	1 3.5	80 55.0	
Rio Janeiro, Ft. Villagagnan, S.M.	22 54.7	43 6' 20"		Port Manta, N.W. Point of Town	0 56.8	80 42.8	
Santos Harbour, Arsenal.....	23 55.8	46 17.8		Juan Fernandez I., Cumberland Ft.	33 37.6	78 50.0	
Moela *.....	24 3.1	46 13.8		Galapagos, Charles Isle, P. O. Bay	1 15.5	90 28.5	
Cape Joao Diaz.....	26 10.3	48 30.0		Cocos Isle, Chatham Bay.....	5 32.9	98 58.4	

XX. ARCTIC OCEAN.	Lat. N.	Long. E.	ARCTIC OCEAN.	Lat. N.	Long. W.
Kola Town, Lapland	68 52.5	83 1.0	Sitka, Arsenal *	57 2.9	135 17.2
Sviatoi Nos, North Tower	68 10.0	39 47.0	Mount Fairweather	58 13	136 35
Sosonova	67 41.0	41 2.5	Port Mulgrave, Port Turner	59 33.0	139 43.0
Orlovsk *	67 11.5	41 22.2	Mount St. Elias, 16,800 feet	60 17	140 52
Sosonovets, Tower	66 29.5	40 44	Hitchinbroke Isle, South Point	60 16	146 27
Tetrina, Village Chapel	66 3.9	38 17.5	Port Etches, Russian Settlement	60 21.2	146 32
Cape Touri	66 33	34 28	Montague Isle, West side	60 16	146 50
Kundalaksha Monastery	67 7.7	32 26	Port Chalmers, East Cove	59 9	151 18
" River Mouth	65 45.1	34 42.7	Cape Elizabeth, East Point	57 34	151 46
Kemini, Church	64 56.5	34 38.7	Kodiac Isle, East Point	56 34	153 22
Onega, St. Michael Church	63 53.6	38 8.5	Trinity Is., East Point, Rocks		
Jaghinsk Isle, North Point *	65 12.3	36 51.5	Aleutian Isles.		
Pertominsk, Monastery	64 47.2	38 29.2	Ounalaska, Illuluit Port	53 52.4	166 32.0
Archangel, Trinity Church	64 32.1	40 33.5	" South Point	53 14	167 47
Moudiga Isle, * Dvina River	64 55.8	40 16.2	Bogolov Isle, South Peak	53 56.3	167 58
Cape Kerets	65 19.9	39 45	Goreloy, or Burning Isle, Snow	51 56	178 40
Cape Voronoy	66 31.1	42 19.7	St. Paul Isle, East Point	57 20	169 14
Morioretz, N.W. Point *	66 45.7	42 29	Bristol Bay, Cape Tschichagoff	58 17	157 54
Mezen, Epiphany Church	65 50.3	44 17	" Cape Constantine	58 29	158 45
Cape Knouchin, near Brook	67 11.5	43 48.7	Cape Newenham	58 42	162 24
Cape Kanin, Noss	68 39.2	43 48.7	Nuniwak Isle, N.E. Point	60 32	165 30
Kolguev Isle, North Point	69 30	49 20	Isle St. Matthew, S.E. Point	60 18	172 4
Cape Mikoulikin	67 47	46 32	" North Point	60 44	172 52
Vaigatch Isle, North Point	70 28	59 10	Isle St. Lawrence, West Point	63 34	171 45
" South extremity	76 20	73 10	Cape Koumianstov	61 49	166 18
" West extremity	72 5	51 25	Port Clarence, Port Spencer	65 16.7	166 48.0
Nova Zembla, Mount Pervous Motrennaia	72 54	53 22	Cape Prince of Wales	65 33	167 59
" Admiralty Peninsula, W. Pt.	75 0	55 22	Kotzebue Id., C. Esenberg, E. Pt.	66 33	163 28
" Cape Nassau	76 35	62 40	" Chamisso Isle	66 13.2	161 46.0
" N.E. Point Cape Jelanie	76 58	76 40	Cape Lisburn	68 52	166 6
Spitsbergen, Cloven Cliff	79 50.0	11 40.5	Icy Cape	70 20	161 46
" Magdalena Hook	79 31	10 41	Point Barrow	71 24	156 20
" Treurenberg B. Hecla Cove	79 55.3	16 52	Point Beechey	70 24	149 37
" Verlegen Hook	80 2	16 37	Herschel Isle, South Point	69 34	139 3
" Black Point	80 28	19 28	Mount Cupola	68 45	137 53
" South Cape, or C. Look-out	76 35	17 23	Mackenzie River, West Mouth	68 49	136 37
" Ryk Isle	77 50	26 10	Cape Bathurst	70 36	127 35
" Fair Foreland	78 53	10 35	Cape Parry, N.E. Point	70 6	123 35
Maksimov Isle	74 20	76 30	Coppermine River, Mouth, E. side	67 48.5	115 31.25
Bielor Isle, Cape Schubert	73 20	72 20	Cape Franklin	68 38	109 4
N.E. Cape of Obi Gulf	73 12	77 0	Melbourne Isle, East Point	68 32	104 30
Cape Timour	77 0	97 30	White Bear Point	68 7.1	103 36.7
Cape Sivero, Vortochi	78 20	100 0	Point Ogle	68 14.0	96 4
Olensk River, Mouth	73 0	118 50	Castor and Pollux River	68 28.5	94 14
Lena River, Mouth, N. Point *	73 30	126 30	Aberdeen Isle, West end	68 36	93 10
C. Mourachi, Mouth of the Jana	71 35	135 50	Baring Isle, Nelson's Head	71 5	123 0
Linkhov Islands, East Point	75 10	150 30	" Ballast Beach	74 27	122 32.3
Linkhovsk Isle, South Point	73 20	140 15	" Cape Crozier	74 30	121 30.8
Cape Sviatoi	73 2	141 30	" Bay of Mercy	74 6	117 55
Mouths of Indagurka R., E. Point	71 0	151 40	" Cape Hamilton	74 15	117 30
Bear Islands, East or Column Isle	70 38	162 20	Melville Isle, Winter Harbour	74 47.2	110 48.25
" West Isle	70 50	160 35	Cape Providence	74 20	112 30
Cape Chelagskoi	70 2	170 47	Byam Martin Isle, South Point	75 0	104 8
Cape Severni, or North Cape	68 55	179 57	Bathurst Isle, Cape Cockburn	75 3	100 23
Kolioukhin Isle, South Point	67 27	184 24	Lowther Isle, South Point	74 26	97 40
Cape Serdze Kamen	67 12	188 20	Griffith Isle, South Point	74 28	95 20
Cape Vostoichin, or East Cape	66 3	190 16	Cornwallis Isle, East Point	74 38	93 34
St. Lawrence B., E. Pt., Entrance	65 37	189 11	Beechey Island	74 43.5	91 39.3
Cape Tchoukotski	64 17	187 46	Port Leopold	73 50	90 15
Cape Navarin	62 16	178 56	Cape Bullen	74 22	85 0
Cape Olyutorski	59 57	170 19	Possession B., S. Entr. Lancaster Sound	73 30	77 20
Karaghin Isle, North Point	59 13	164 38	" Bellot's Straits, Depot Bay	72 0	94 0
" South Point	58 28	163 27	Fury Point	72 50	92 0
Mednoi Isle, South Point	54 33	168 11	Cape Felix	69 55	98 5
Behring Isle, West Point	55 17	165 46	Victory Point, K. William's Land, the Franklin Record	74 43.4	91 39.3
" South Point	54 43	166 44	Cape Herschel	68 42	98 2
Cape Kamchatka	56 0	163 10	Magnetic Pole (1831)	70 5	96 47
Kluchevski, 16,131 feet	56 8	160 41	C. Parry, Whale Sound, S. Head	77 6	71 23
Cape Kronotski	54 54	162 35	Kane's Furthest, Mount Parry	82 30	66 0
Kronotski Peak, 10,610 feet	54 45	160 35	Cape Bellot	82 1.9	68 10
Cape Shipounski	53 6	160 4	Cape Jefferson	81 0	67 40
Mount Vilutchin, 7,060 feet	52 47	158 22	Cape Andrew Jackson	80 17.6	66 40

ARCTIC OCEAN—continued.		Lat. N.	Long. W.	ARCTIC OCEAN.		Lat. N.	Long. W.
Cape John Barrow		80 17.3	69 58	Labrador, Black Head		60 0	64 28
Cape Winfield Scott		79 6.8	66 49	Mount Thoresby, Port Mauvers ..		56 58	62 27
Rensselaer Bay		78 38.0	71 14	Cape Harrison		54 54	58 5
Cape Ingfield		78 34.5	72 51	Gannet Islands, Sandwich Bay ..		54 0	56 34
Cape Dudley Digges		76 5	68 46	Cape St. Lewis		52 21	55 39
Cape York		75 55	65 30	Table Head		52 6	55 43
Sanderson's Hope (Upernavik) ..		72 42	56 10	Belle Isle, N.E. Point		52 1	55 17
Disco Isle, South Point		69 11	53 20	Newfoundland, Quirpon Isle, }			
West Point		69 53	54 53	North Point		51 38	55 24
Whaletish Islands, Kronprind-				Croc Harbour, S. Point, Entrance		51 2.4	55 46
sen's Isle, Flag-staff		68 58.9	53 14.0	Rouge Harbour, Entr., S. Point ..		50 54	55 50
Lichtenfeld		63 2	51 40	St. Barbe Islands, East Point ..		50 11	55 42
Cape Comfort		61 44	50 0	Cape St. John, North Bill		50 0	55 20
Cape Farewell		59 49	43 54	Cape Freels		49 16	53 31
Igloodik Isle		69 21	81 31	Cape Bonavista *		48 42	53 8
Winter Isle, Melville Pen., S. Pt.		66 11.4	83 10.0	Trinity Harbour, Hog Nose		48 21	53 24
Salisbury Isle, East Point		63 27	76 40	Cape St. Francis		47 48	51 51
Bulton Isle, N.E. Point		60 45	64 58	Iceland, E. Extr., Pt. Gepirhuk ..		65 5	13 33
Resolution Isle, East Point		61 30	64 30	North Cape		66 28	22 29
S. Pt., N. Entr. Hudson's				W. Pt., or Staalburghuk ..		65 30	24 35
Straits		61 21	64 54	Reikiavik		64 8.4	21 58
Cape Chidleigh		60 25	65 0	Mount Hecla, 5,364 feet		63 58	19 44
York Factory, Hudson's Bay		57 0	92 19	Cape Reikianess .?		63 48	22 45
Cape Henrietta Maria		55 10	82 30				

ANTARCTIC OCEAN.		Lat. S.	Long. E.	ANTARCTIC OCEAN.		Lat. S.	Long. W.
Ross's Furthest		78 4	161 0	South Shetlands, C. Possession		63 45	61 50
Mount Erebus, 12,400 feet		77 33	166 58	Deception Isle, Port Foster ..		62 55.6	60 35.0
Mount Sabino		71 42	169 55	New Orkneys, E. Extremity		60 49	44 20
Balleny Islands		66 44	163 11	Coronation Isle, E. Summit ..		60 46	45 53
Adelie Land, Geology Point		66 35	140 10	Sandwich Islands, Candlemas Isle		57 10	26 45
Enderby's Land		67 30	44 0	South Thule Islands, E. Point ..		59 26	27 13
Marion and Crozet's Isle, Hog I.		46 9	50 28	South Georgia, North Point		53 57	38 13
Kerguelin's Land, Christmas				Bouvet's or Circumcision Isle ..		54 20	6 0
Harbour		48 41	69 6				

MID-ATLANTIC.		Lat. S.	Long. W.	MID-INDIAN OCEAN.		Lat. S.	Long. E.
Region of Submarine Volcanoes.		7N. to 1S.	16 to 24W.	Great Chagos Bank, East extr. ..		6 5	72 43
Penedo de San Pedro, or St. }				North extremity		5 39	72 1
Paul's Rocks, Summit		0 35.5N.	29 22.0	N.W. extr., Eagle			
Fernando de Noronho, Concep- }				Isle, N. Point		6 10.5	71 18
cao Fort		3 50.0	32 25.0	Diego Garcia S. Point		7 26.0	72 23.2
Rocas, N.W. Cay		3 51.5	33 49.0	Cargados			
Trinidad Isle		20 31	29 19	Baleine Shoal		16 40.7	59 33.5
Martin Vas, Large Isle		20 28	28 51	Frigate Isle		16 36.0	59 33.2
Tristan d'Acunha, Waterfall,				Pearl Isle		16 32.7	59 32.7
North side		37 1.9	12 17	Siren Isle		16 28.2	59 37.2
Inaccessible Isles, West one		37 17	12 36	Establishment		16 26.5	59 39.0
Nightingale Isle		37 27	12 29	North Isle		16 23.3	59 41.0
Gough's Isle		40 19	9 44	Albatross Isle		16 15.0	59 37.7
Saxenburg		31 35	16 0	St. Paul's Isle, Ninepin Rock on }			
				East side		38 43	77 34
Mid-Pacific.				Amsterdam, Summit		37 52	77 35
Easter Isle		27 6	109 17	Direction Isle, S.W. Point		12 5.4	96 53.0
Pitcairn Isle		25 3.6	130 8				
Masafuera Isle		33 49	80 54				

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